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METROPOLITAN TORONTO AND REGION TRANSPORTATION STUDY

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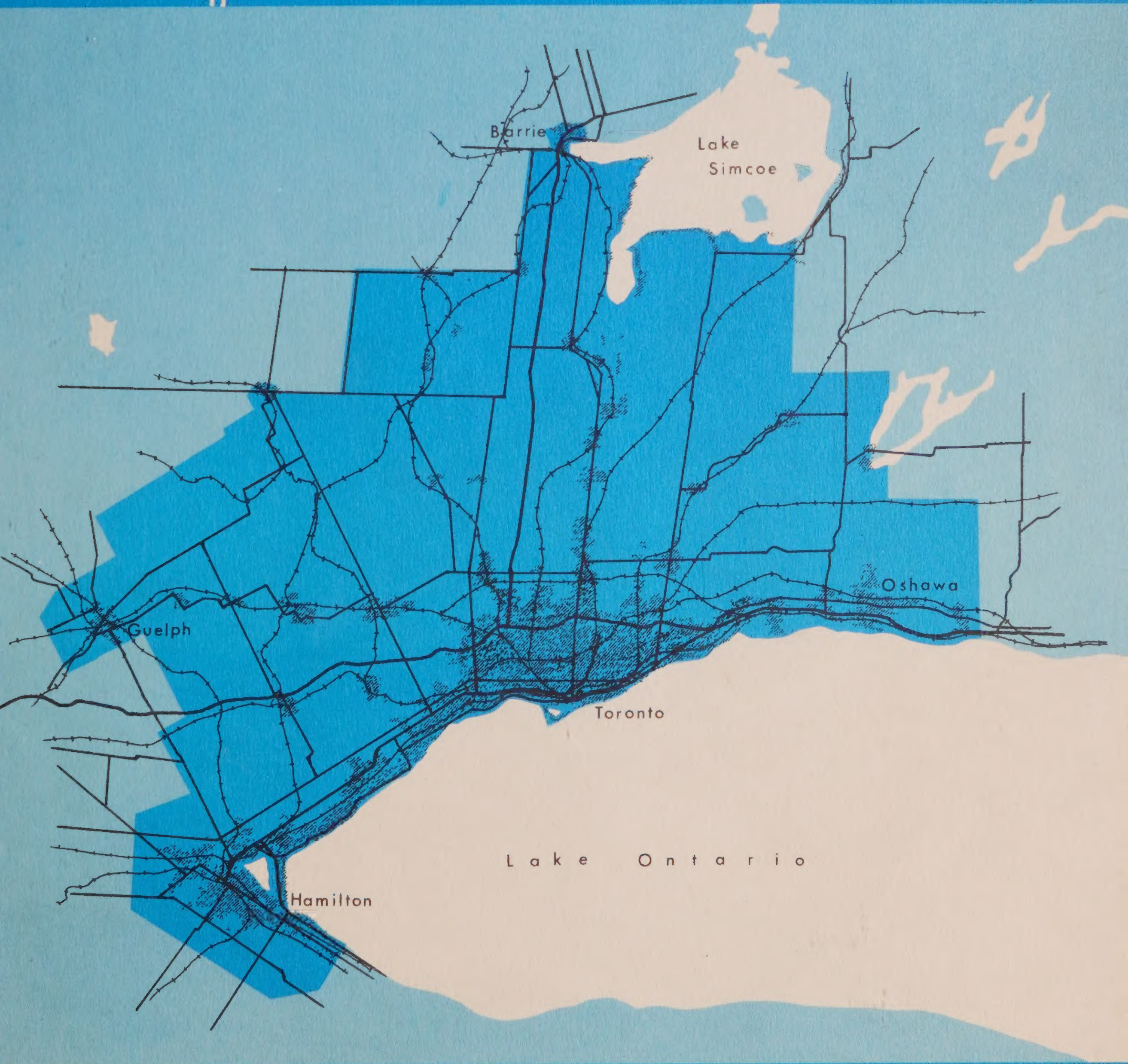

OCT. 1964

COMMUTER RAIL FEASIBILITY STUDY MARKET REPORT

Lyon de Brouwer & Co. Ltd.

ATTITUDE AND MOTIVATION STUDY
OF AUTOMOBILE COMMUTERS
WHO TRAVEL TO WORK FROM
SUBURBAN AREAS IN AND AROUND
METROPOLITAN TORONTO

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EXECUTIVE SUMMARY

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Automobile commuters living along a rail corridor from Burlington, Ont., in the West to Ajax, Ont., in the East were interviewed with the purpose of determining what factors influence the extensive use of the automobile for commuting to work and what factors might divert automobile commuters to an experimental rail service.

HIGHLIGHTS OF FINDINGS

1. The main reasons respondents use a car to commute to work are that
   - car is faster than other modes
   - car is more flexible than other modes
   - car compensates for inadequacies of public transit.

2. The main disadvantages of using a car to commute to work are
   - traffic hazards
   - personal hazards
   - costs of using a car.

3. Important features of a commuter rail service that might attract car users are
   - if train took less time than car
   - if train provided frequent service during morning and evening rush hours
   - if commuting costs could be cut by using rail.

4. 75% of the respondents interviewed said they would take trips by train if train provided all services they considered attractive.

5. It is estimated that approximately 25,000 commuters who now drive cars could be diverted to the experimental rail service.

SECTION I

PURPOSE AND METHOD OF STUDY

PURPOSE

The general purpose of this study is to determine the motivations and attitudes of automobile commuters living along a rail corridor extending from Burlington, Ont., in the West to Ajax, Ont., in the East, with respect to planning an experimental rail commuter service on the Lakeshore railway line between Burlington and Ajax.

More specifically, the purpose of the study is to determine what factors, if any, would divert automobile commuters to this experimental rail service. In other words, what factors, in the judgment of the commuters themselves, influence them to use their present mode of travel and what factors would influence them to shift to a mass rail transit system if one were available.

METHOD

In order to determine the attitudes of automobile commuters, it was first necessary to identify them. Following this identification, a small number of automobile commuters was interviewed in depth to determine the range of attitudes towards auto commuting and those factors (if any) that would attract automobile users to a rail service. Then a sample of all identified automobile commuters was interviewed face to face to obtain detailed information on attitudes and motivation.

This study was, therefore, carried out in three phases:

Phase I - Identification of automobile commuters by telephone
Phase II - Depth interviewing
Phase III - Face to face interviewing

Phase I. IDENTIFICATION OF AUTOMOBILE COMMUTERS BY TELEPHONE

The overall study area was first sub-divided into seven origin zones (see appendix A, page 26 for map showing boundaries of zones and appendix A, page 27 for detailed description of zones); the boundaries of the zones were defined arbitrarily. The size of the population of households with telephones in each zone was obtained from the Bell Telephone Company of Canada. About 95% of the households in the zones surveyed have telephones (Statistics Bureau, Bell Telephone Company of Canada).

It was decided that about 150 automobile commuters in each of the seven zones would be interviewed face to face. In order to identify these 1050 automobile commuters and allow for such contingencies as refusals, no workers, change of telephone numbers, etc., it was decided that approximately 10,000 identifying telephone interviews would have to be made.

These 10,000 households were selected by a systematic sampling procedure, omitting business and commercial establishments. In other words, only private dwellings having telephones were called. Because of the vastly different number of private dwellings in each zone, the sample ratio varied from one telephone call for every five private dwellings having telephones to one telephone call for every twenty-seven private dwellings having telephones, depending on the number of private dwellings in each zone.

These interviews were conducted by trained interviewers using a standard questionnaire (see appendix B, page 29). Briefing notes to interviewers are contained in appendix B, page 30. Interviewers asked each adult person who answered the telephone to state the number of workers in the household who made a trip to work four or more days during the preceding

week, to give the mode of transportation used and the destination of the worker.

Figures obtained from this telephone survey were used to estimate the share of market by each major mode of travel, by origin and by destination. See section IV, page 18, for discussion of share of market data.

Phase II DEPTH INTERVIEWING

Approximately 35 workers identified as automobile commuters (approximately 5 workers per zone) were interviewed in depth, i.e. each respondent was encouraged to free associate along particular topics dealing with commuter travel. These interviews took approximately one hour, were usually scheduled in advance and were conducted in the home of the respondent. See appendix C, page 32, for instructions to interviewers and outline of topics for depth interviews. From the attitudes expressed in these interviews, factors regarding automobile and train commuting were developed for use in phase III of the study.

Phase III. FACE TO FACE INTERVIEWING

Face to face questionnaires were administered to 1025 of the 3,709 workers identified as "in-scope" automobile commuters. A sample of the questionnaire and instructions to interviewers is in appendix D, page 34. Attitudes regarding the following topics were measured:

a) Reasons for using a car to go to and from work
b) Disadvantages of using a car to go to and from work
c) Features of a commuter rail service that would be attractive enough so that respondents would take the train rather than a car.

Respondents were handed a deck of cards, each card showing a factor related to each topic, and asked to place them on a corresponding scale indicating varying degrees of importance

SECTION II

DEFINITIONS

ranging from 1 or most important to 7 or least important. Interviewers scored each factor on a grid as respondents placed each card on the scale. In addition to the attitudes, motivations and opinions of automobile commuters, questions regarding household information, work-trip habits and non-work-trip habits were asked of respondents. The results of these additional questions will not be shown in this report.

The respondents interviewed were selected by a modified stratified random sample which assured adequate representation of respondents from each origin zone as well as adequate representation of each destination zone. Every effort was made to eliminate salesmen, doctors, i.e. people who depend on cars to proceed with their daily work.

WARNINGS

The data found in this report should be viewed as being approximately correct, not absolutely correct. The confidence limits to be used with the data will vary and, where applicable, are to be found with the presentation of tables.

The confidence limits and statistical analysis were provided by Professor Donald J. Clough, Associate Professor of Industrial Engineering, University of Toronto, who acted as a consultant, after the field work of the study was completed.

The reader should exercise extreme caution in the use of this data for purposes other than for the original intention of measuring motivation and attitudes of automobile travellers. In addition, the attitudes of the respondents at the time the questionnaire was administered need not remain constant, but may be subject to change.

DEFINITIONS

1) "household"

A household is a group of rooms occupied as separate living quarters bv a family or other group of persons, usually having private cooking facilities available. An "in-scope" household is a household which produced one or more "in-scope" respondents.

2) "in-scope" respondent (telephone survey)

For the purpose of the telephone survey (phase I) an "in-scope" respondent is:

1) A resident of one of the origin zones surveyed (see appendix A, page 27)
2) Works four or more days per week in a destination zone (see appendix A, page 28) other than the zone in which he resides.

3) "in-scope" respondent (face to face interviews)

For the purpose of the face to face interview (phase III) an "in-scope" respondent is:

1) A resident of one of the origin zones surveyed
2) Works four or more days per week in a destination zone other than the zone in which he resides, providing this destination zone is at least two zones removed from his zone of origin and providing this destination zone is in a location closely parallel to the existing rail corridor
3) Uses a car to travel to work
4) Is not a salesman, a doctor or a person who requires a car to proceed with his daily work.

4) "worker"

A worker is an individual who went to work four or more days per week, at the time the interview took place.

SECTION III

DETAILS OF FINDINGS

How the following tables were produced

1) Each respondent placed each factor card on a 7 point scale. Cards placed under point 1 on the scale were given the highest value and those placed under point 7 the lowest value.

2) For purposes of scoring, the rating of each factor was weighted using a point system. For example, factors rated "1" were assigned seven points, factors rated "2" were assigned six points and so on down to factors rated "7", which were assigned one point.

3) In Table I, scores were additionally weighted by the number of train trips per week the respondent said he would take, if the train provided all features he considered attractive. This gave relatively more importance to the rating of a respondent who said he would take ten train trips per week than a respondent who said he would take one train trip per week.

4) Table I also omits the scores of respondents who said they would not take any train trips, even if the train provided all the features they considered attractive. This put more emphasis on the ratings of respondents who said they would go by train.

5) Each factor is presented in terms of the percentage of the maximum possible score obtainable from all respondents. In other words, if factor "X" was rated "1" by 1000 respondents, it would have a maximum score of 7000 points. If, in reality, the total score obtained by adding the results from the 1000 respondents was 3500, the resulting percentage for factor "X" would be 50%, i.e. $\frac{3500}{7000} = 50\%$.

6) Each factor was then ranked in order of the highest percentage of the possible obtainable score.

7) The following presentation and analysis apply to the total study area rather than segments of it. Zonal breaks are not shown because there are no significant differences in attitudes of respondents living in the different origin zones or residing in the Eastern and Western rail corridors. Additionally, it is not feasible to design a commuter service that satisfies different needs in two or more immediately adjacent geographical areas. Zonal data is available, however, and may be obtained by a written request to the authors.

RELATIVE IMPORTANCE OF FEATURES OF A COMMUTER RAIL SERVICE THAT WOULD ATTRACT CAR USERS. (Question IIIC of Questionnaire, page 44, Appendix D)

It can be observed in Table 1, page 9, that the top five ranked factors have scores that are so similar that they can be regarded as having equal importance. Frequent rush hour service (both morning and evening) seems to have relatively more importance than the other leading factors. Although factor"O", "if train took less time than car" is top rated, factor "Q", "if train takes the same time as car", is rated quite high (76%). Thus it could be interpreted that, if satisfactory rush hour service is provided, trains that take about the same time as car would be satisfactory to the majority. For the experimental service, it is suggested that train departures be kept at maximum, and efforts to improve running times be implemented once the experimental service is established and the potential commuters have actually changed modes. Train running times should, however, be somewhat faster than public transit running times for the same distance, as respondents rated this factor (factor "O") quite high, i.e. 78% of total possible score. The total cost of commuting by train (factor "G") should be lower than the overall cost of commuting by car. The respondents placed considerable emphasis on weekly or monthly tickets (factor "B") and free local buses serving the train station (factor "K") as possible ways of achieving this goal.

Factor "AA", or the provision of sufficient seats for passengers, was rated at 79%. It is suggested that at the inception of the service, at least, sufficient equipment be pooled to provide this service.

Factor "Y" (Train platform providing shelter) and factor "J" (Parking at the train station) were quite important in the eyes of the respondents, as was factor "CC"(Air conditioning on trains).

TABLE I

RELATIVE IMPORTANCE OF FEATURES OF A COMMUTER RAIL SERVICE THAT WOULD ATTRACT CAR USERS

RANK	FACTORS		SCORE	%*
	CODE	DESCRIPTION		
1	O	If the train took less time than car	39043	86
2	V	If the train provided frequent service during the morning rush hours	38880	86
3	G	If the total cost of commuting by train was cheaper than the total cost of commuting by car	38505	85
4	W	If the train provided frequent service during the evening rush hours	38329	85
5	B	If weekly or monthly tickets were available at a special rate to train commuters	38264	85
6	K	If free local buses ran to an from the train station in my home area	35757	79
7	AA	If the trains had enough seats for all their passengers	35649	79
8	N	If the train took less time than public transit	35295	78
9	Q	If the train took about the same time as car	34423	76
10	Y	If a train platform provided shelter from the weather	33827	75
11	J	If parking were available at the train station	33603	74
12	Z	If the trains had clean cars	33205	73
13	CC	If the trains had air conditioning in cars	32983	73
14	H	If the total cost of commuting by train was about the same as the total cost of commuting by car	32368	72

TABLE I (cont'd)

RANK	FACTORS CODE	DESCRIPTION	SCORE	%*
15	II	If the train ticket could also be used on public transit	32323	71
16	D	If train commuters could transfer at a reduced rate to public transit	32014	71
17	U	If there was a late evening train service	31586	70
18	E	If train fares were about the same as the public transit fares	31418	69
19	GG	If there was no crowding or pushing getting on or off the trains	30963	68
20	R	If local buses ran to and from the station in my home area, at present charges	30259	67
21	C	If students were allowed to travel at reduced rates	29798	66
22	X	If a modern up-to-date train station was provided	27087	60
23	S	If there was a special service for hockey games, and other sport and theatre events	26428	58
24	A	If a family plan was available to train commuters at a special rate	26347	58
25	L	If the train took about the same time as public transit	25926	57
26	EE	If the trains had a club car service in morning which could provide coffee or breakfast	24960	55
27	T	If there was a weekend train service	24733	55
28	DD	If reading material was available on trains	21949	48
29	BB	If trains had adjustable seats	21897	48
30	FF	If the trains had a car service which could provide refreshments in the evening	21637	48

TABLE I (cont'd)

RANK	FACTORS CODE	DESCRIPTION	SCORE	%*
31	HH	If there was music on the train	20221	45
32	I	If the total cost of commuting by train was slightly more expensive than the total cost of commuting by car	19826	44
33	F	If train fares were slightly more expensive than public transit fares	18586	41
34	JJ	If the trains provided reserved seats at a higher cost than non-reserved seats	15303	34
35	M	If the train took more time than public transit	11782	26
36	P	If the train took more time than car	11559	26

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*Percent = the number of points each factor scored compared to the number of points possibly obtainable

NUMBER OF RESPONDENTS = 707

NOTE 1 :- Scores are weighted by the number of trips each respondent said he would take if train provided all services he considered attractive.

NOTE 2 :- The total possible obtainable score for any factor is 45,255.

POSSIBLE REASONS WHY RESPONDENTS USE A CAR RATHER THAN OTHER MODES TO COMMUTE TO WORK. (Question III A of Questionnaire, Page 40, Appendix D.)

Factor "P" (see Table II, page 13) or "car faster than rail or public transit" was by far the most important reason (73% of total possible score) for using a car to go to and from work. Factor "F" or "not tied to schedules" is rated second (62%) by the respondents. This advantage of using a car can possibly be offset by a high frequency of train service during rush hours.

Factor "Q" or "the only way to commute" was rated fourth (53%). This is probably a reflection of a feeling that rail and public transit services either do not exist in the minds of the respondents or are a poor substitute for using a car. The ranking of factor G as third, "live too far from rail and bus", indicates that people depend on a car when public transit or rail service is non-existent or inconvenient to use. Provision of convenient local bus service to trains or free local bus service to trains may help to correct this poor image of rail service.

Factor "J" or"having a car during the day", which ranks fifth, may be considered as an extension of the feeling of dependence on the car. This may be the result of habits formed by using the car for social and recreational purposes. People have acquired these habits as a result of being previously inconvenienced by existing public transit and rail services. Few people really need a car during working hours, as is indicated by the low rank of factor "K" or "need car at work". Further evidence that convenience factors are more important than cost factors is seen in the relatively low rank of factor "O" or "cheaper than rail or public transit", which ranks eighth behind seven factors all dealing with speed and convenience.

TABLE II

POSSIBLE REASONS WHY RESPONDENTS USE A CAR RATHER THAN OTHER MODES TO COMMUTE TO WORK

RANK	FACTOR		SCORE	%*
	CODE	DESCRIPTION		
1	P	Car is faster than rail or public transit	4766	73
2	F	I am not "tied" to schedules	4153	62
3	G	I live too far from the bus or train stations to use the bus or train	3487	53
4	Q	Car is the only way I can get to and from work	3480	53
5	J	I have the car whenever I want it during the day	3459	52
6	R	I work too far from the bus or train stations to use the bus or train	3137	47
7	L	No transfers are necessary when commuting by car	3018	45
8	O	Commuting by car is cheaper than commuting by rail or public transit	2992	45
9	M	More packages or parcels can be carried when commuting by car	2755	42
10	H	It is enjoyable to drive to and from work by car	2635	39
11	K	I need my car while at work	2629	39
12	C	Commuting to work by car gives me a feeling of independence	2606	39
13	I	Car radio provides entertainment while commuting	2565	39
14	E	I own a car so I might as well use it to commute	2499	38
15	A	There is no one around to bother me when I commute by car	2198	33
16	B	I like the company of friends when commuting by car	1986	30

TABLE II (cont'd)

RANK	FACTORS CODE	DESCRIPTION	SCORE	%*
17	D	My friends travel to and from work by car	1709	26
18	N	Car is safer than rail or bus	1672	26

* Percent = the number of points each factor scored compared to the number of points possibly obtainable

NUMBER OF RESPONDENTS = 946

NOTE :- The total possible obtainable score for any factor is 6615.

POSSIBLE DISADVANTAGES OF USING THE CAR TO COMMUTE TO WORK

(Question III B of Questionnaire, page 42, appendix D. See Table III, Page 16, for ranking of factors for this question.)

Factor "E", or "driving difficult in bad weather" was the main disadvantage seen in using the car. While this factor obtained top rating (68%), one must view the importance of this in relation to the true amount of bad weather that makes driving disagreeable. This factor is only one particular inconvenience of commuting by car. Respondents are also aware of other inconveniences. "Traffic tie-ups disagreeable" or factor "A" (62%) and "heavy traffic disagreeable" or factor "C" (60%), in spite of their lower rank, probably exist more frequently when commuting by car. Hazards of commuting by car seem to be next in importance, with factor "K" or "Possibility of mechanical failure", factor "I" or "driving is a chore" and factor "B" or "commuting by car is dangerous" also ranking relatively high. It appears generally that the hazards and inconveniences of commuting by car worry people most.

The rank of factor "H" or "increased wear and tear on car", in third place with 60%, along with factor "G" or "expensive to use car", which ranks sixth with 47%, and factor "P" or "commuting increases insurance", which ranks eighth with 42%, indicates that respondents consider the high cost of commuting by car as an important disadvantage.

It would seem quite clear that any promotional material attempting to divert automobile commuters to a rail service should point up the many inconveniences, personal hazards and the various real costs of commuting by car.

TABLE III

POSSIBLE DISADVANTAGES OF USING THE CAR TO COMMUTE TO WORK

RANK	FACTORS		SCORE	%*
	CODE	DESCRIPTION		
1	E	Driving is sometimes difficult when the weather is bad	4459	68
2	A	Traffic tie-ups make driving disagreeable	4124	62
3	[illegible]	Commuting contributes to excess wear and tear on the car	4039	60
4	[illegible]	Heavy traffic makes driving disagreeable or difficult	3893	59
5	K	Mechanical failures in the car can happen while commuting	3326	50
6	[illegible]	All factors considered, it is expensive to commute by car	3173	47
7	I	Driving to and from work every day is a chore	2887	44
8	P	Car insurance costs more when the car is used to commute	2766	42
9	[illegible]	Commuting by car is dangerous	2753	41
10	S	The car driver can never read a paper while commuting	2393	36
11	N	Commuting by car is tiring	2378	36
12	J	Other drivers frustrate me	2372	36
13	L	Parking is costly	2291	35
14	D	Parking space is difficult to find	2029	30
15	O	Commuting by car is not comfortable. It is often too hot or too cold	1822	28

TABLE III (cont'd)

RANK	FACTORS CODE	FACTORS DESCRIPTION	SCORE	%*
16	R	When commuting by car one is almost compelled to be sociable with fellow passengers	1715	26
17	F	It takes too long to commute by car	1611	24
18	M	Commuting by car makes me nervous	1605	24
19	Q	When I drive to and from work I have to worry about passengers	1597	24

* Percent = the number of points each factor scored compared to the number of points possibly obtainable

NUMBER OF RESPONDENTS = 946

NOTE :- The total possible obtainable score for any factor is 6615.

SECTION IV

ESTIMATES OF PRESENT COMMUTER MARKET

Although the telephone phase of the survey was primarily designed to identify workers who commuted by car, it also yielded data on the size of the total commuter market and the share of the market held by each mode, i.e. rail, automobile and public transit. Origin and destination data were also obtained.

TABLE IV

NUMBER OF HOUSEHOLDS IN STUDY AREA HAVING TELEPHONES BY ZONE WEST OF UNION STATION AND EAST OF UNION STATION

WEST OF UNION STATION		EAST OF UNION STATION	
Zone A - Burlington	12508	Zone E - Danforth	22440
Zone B - Oakville	10949	Zone F - Scarboro	53297
Zone C - Port Credit	17914	Zone F_1 - Ajax, Pickering	5349
Zone D - Mimico	45993		
TOTAL	87364	TOTAL	81086

Source: The Bell Telephone Company of Canada

The total number of households in the study area having telephones is almost equally divided between zones west of Union Station and zones east of Union Station.

TABLE V

PERCENTAGE OF HOUSEHOLDS INTERVIEWED BY TELEPHONE HAVING "IN-SCOPE" WORKERS, "OUT OF SCOPE" WORKERS AND NO WORKERS BY ORIGIN ZONE

HOUSEHOLDS INTERVIEWED HAVING	A	B	C	D	E	F	F_1	TOTAL ALL ZONES
"In-Scope" Workers	14	29	49	38	46	44	51	36
"Out of Scope" Workers	77	61	38	48	35	49	40	53
No Workers	9	10	13	14	19	7	9	11
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%
Number of households	1838	1710	2542	1531	739	971	193	9524

Source Table 1, Appendix E, Page 66.

Households interviewed in Burlington (Origin Zone "A") and Oakville (Origin Zone "B") have a considerably lower percentage of "in-scope" workers than those in the other zones in the survey area. This is probably due to the fact that Hamilton provides a large amount of employment for Burlington residents, and Oakville has industries to attract local residents.

TABLE VI

NUMBER OF "IN-SCOPE" WORKERS PRODUCED BY EACH "IN-SCOPE" HOUSEHOLD INTERVIEWED BY ORIGIN ZONE

	ORIGIN ZONE							
	A	B	C	D	E	F	F_1	TOTAL
Number of "In-Scope" Households	264	487	1253	585	340	425	98	3452
Number of "In-Scope"Workers	275	579	1531	864	691	604	122	4666
Number of "In-Scope" Workers per "In-Scope" Household	1.02	1.18	1.21	1.49	2.01	1.41	1.22	1.36

Source: Tables 1 and 2, Appendix E, Page 66.

The number of "in-scope" workers per "in-scope" household has a range of one per household in the Burlington zone to two per household in the Danforth zone. There are about one and one-third "in-scope" workers per "in-scope" household in the study area as a whole.

TABLE VII

PERCENTAGE OF "IN-SCOPE" WORKERS INTERVIEWED USING EACH TRAVEL MODE SHOWN BY ORIGIN ZONE

	ORIGIN ZONE							
MODE	A	B	C	D	E	F	F_1	TOTAL
Automobile	95	90	83	81	55	78	93	79
Public Transit	3	3	10	18	44	22	7	17
Train	1	7	6	1	*	*	0	3
Other Modes	1	*	1	*	1	*	*	1
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%
Number of "In-Scope Workers	275	579	1531	864	691	604	122	4666

*Less than 1%

Source Table 2, Page 66, Appendix E.

Almost 80% of all "in-scope" workers interviewed by telephone in the study area travel by automobile. In zone "E". the Danforth area, automobile and public transit have almost equal shares of the market. Generally, public transit's share of the market increased with the proximity of a zone to downtown Toronto.

TABLE VIII

PERCENTAGE DISTRIBUTION BY ORIGIN AND DESTINATION ZONES OF "IN-SCOPE" WORKERS WHO COMMUTE BY CAR

(TELEPHONE SURVEY)

	ORIGIN ZONE							
DESTINATION ZONE	A	B	C	D	E	F	F_1	TOTAL
A (Burlington)	-	2	*	*	*	-	-	*
B (Oakville)	74	-	9	1	*	*	-	9
C (Port Credit)	8	29	-	10	3	*	-	7
D (Mimico)	-	23	35	-	2	2	1	16
TORONTO 1 (See note)	12	25	23	37	44	58	42	32
TORONTO 2 (See note)	6	21	31	51	50	40	29	35
E (Danforth)	-	-	-	-	-	-	5	*
F (Scarboro)	-	*	1	1	-	-	23	1
F_1 (Ajax, Pickering)	-	-	-	*	1	-	-	*
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%
Number of Workers	262	516	1269	701	376	472	113	3709

* Less than 1%

NOTE:- For explanation of terms "TORONTO 1" and "TORONTO 2" see Appendix A, Page 28.

Source: Table 3, Appendix E, Page 67.

About two-thirds of the "in-scope" workers interviewed by telephone, work in Metropolitan Toronto. About half of these repsondents work in a zone arbitrarily defined as "Toronto 1"

which includes a narrow area running parallel to the Yonge Street subway. The other half work in a zone arbitrarily defined as "Toronto 2". A detailed explanation of these zones may be found in Appendix A, page 28.

About half the remaining one-third, "in-scope" workers interviewed work in Zone "D" or Mimico. The balance work in Port Credit and Oakville.

The proportion of "in-scope" workers working in Toronto is not similar for all origin zones. While a greater proportion of workers from the eastern corridor work in Toronto, a greater proportion of workers living in the western zone tend to work in zones adjacent to their home zone. For example, almost all "in-scope" workers originating in Scarborough and Danforth work in Toronto while only 18% of all "in-scope" workers from Burlington and 46% of all "in-scope" workers from Oakville work in Toronto.

TABLE IX

THE PROJECTED TOTAL OF "IN-SCOPE" WORKERS DIVIDED BY MODE OF TRAVEL

MODE OF TRAVEL	"IN-SCOPE"	PROJECTED NUMBER OF "IN-SCOPE" WORKERS
Automobile	3465 (1)	67430 (2)
Public Transit	774	22217 (3)
Train	148	1392 (3)
Other Modes	35	698 (3)
TOTAL	4422	91728 (3)

Source: Tables 2 and 4, Appendix E, Pages 66 and 68.

(1) When the results of the face to face interviews were compared with the results of the telephone survey, a 5% error in the reporting of destinations was found in the telephone survey. This occurred because the respondent in the telephone survey was asked to report for someone else in their family. The number of "in-scope" automobile commuters was then reduced 5% accordingly.

Since no face to face interviews were conducted with people who used modes other than automobile, no adjustment for reporting errors was possible for those data.

(2) 95% confidence limits apply, i.e. there is a 95% chance that the true projected number of "in-scope" workers lies somewhere between 70,610 and 64,490. There is a 2.5% chance that the true projected number of "in-scope" workers is above the upper limit of 70,610 and there is a 2.5% chance that the true projected number of "in-scope" workers is below the lower limit of 64,490.

(3) 90% confidence limits apply. (See Table 4, Appendix E, Page 68 for applicable upper and lower limits.

SECTION V

ESTIMATES OF POTENTIAL RAIL COMMUTER MARKET

In Table IX, Section IV, the projected total population of "in-scope" auto commuters is estimated at 67,430. Results of the Face to Face interview Table 5, Appendix E, showed that 707 of the 946 respondents interviewed (or 75%) said they would take trips by train rather than by car if all features they considered attractive were provided.

If interviews could have been obtained from all of the 67, 430 "in-scope" auto commuters, we assume that 75% of these people would behave in a similar fashion or give similar responses. Therefore, the estimate of the number of "in-scope" auto commuters that could possibly be diverted from automobile to train, if all attractive features were provided, would be 75% of 67, 430 or 50,572.

Since in practical terms it would be impossible to provide all features that would be considered attractive by all respondents, this estimate must be reduced.

In addition, one must take into account the accuracy with which the 707 who said they would take trips represent the total population. Even the 707 who said they would take rail trips may still commute by car once the rail service is instituted.

Considering these limitations, the estimated number of auto commuters that might change to rail should be reduced by at least 50%, leaving approximately 25,000 potential rail commuters. No confidence limits can be applied to this estimate by using a statistically acceptable procedure. However, it is possible for the reader to apply his own confidence limits, based on personal experience.

It should be noted that commuters now using rail and public transit are not included in this estimate. It can be assumed that the people who now use the train will

SECTION V1

APPENDIX A

DESCRIPTION OF ORIGIN AND DESTINATION ZONES

MARKET SURVEY
ORIGIN & DESTINATION
DISTRICTS

DE LEUW CATHER & COMPANY OF CANADA LIMITED
CONSULTING PROFESSIONAL ENGINEERS

METROPOLITAN TORONTO & REGION TRANSPORTATION STUDY — STUDY OF RAILWAY FACILITIES

DL-E-103

APPENDIX A

GEOGRAPHICAL DESCRIPTION OF ORIGIN ZONES SURVEYED

ZONE A - BURLINGTON. Embracing the town of Burlington and surrounding rural area, the zone consists of all residential telephones in the 634 and 637 exchanges as of December 1963.

ZONE B - OAKVILLE. Embracing the city of Oakville and surrounding rural area, the zone consists of all residential telephones in the 827, 844 and 845 exchanges as of May 1963.

ZONE C- PORT CREDIT. Embracing Clarkson, Port Credit, Cooksville and surrounding rural area, the zone consists of all residential telephones in the 274,277,278,279 and 822 exchanges as of May 1963

ZONE D - MIMICO. Embracing Mimico, Long Branch, New Toronto and Etobicoke (South of the Richview Side Road), the zone consists of all residential telephones in the 231,233,239, 251,255,259 and 621 exchanges as of May 1963.

ZONE E - DANFORTH. Embracing an area surrounding the C.N.R. Danforth Station, bounded roughly by Queen Street on the South, Woodbine Avenue on the West, St. Clair Avenue on the North and Birchmount Road on the East. Residential telephone numbers were in many different exchanges listed in the Metropolitan Toronto March 1964 telephone directory and were selected from the 1963 Might's Directory by addresses.

Zone F - SCARBORO. Embracing the Township of Scarboro and the Village of West Hill, the zone consists of all residential telephones in the 261, 266, 267, 284, 751,755,757 and 759 exchanges as of June 1963.

ZONE F_1 - AJAX, PICKERING. Embracing Ajax, Pickering, Dunbarton and surrounding rural area, the zone consists of all residential telephones in the 839 and 942 exchanges as of October 1963.

APPENDIX A

DESCRIPTION OF DESTINATION ZONES

The zones of origin defined above were also defined as destination zones. In addition, two areas of Metropolitan Toronto were defined as destination zones. The boundaries of these zones are as follows:

TORONTO 1. North from the Harbour along Frederick and Pembroke Streets to Bloor. West along Bloor to Church. North on Church and a line projected from Church parallel to Yonge as far as Soudan Ave. East on Soudan Ave. to Mt. Pleasant, North on Mt. Pleasant to Broadway. West on Broadway and Montgomery to Duplex, South on Duplex and a line projected from Duplex (parallel to Yonge) to Delisle Ave. West along Delisle to Avenue Road. South on Avenue Road to Foxbar, East to a projection of Bay Street North. South along this projection of Bay Street to Berryman, West along Berryman to Avenue Road, South along Avenue Road (West side) to College. West a little and south along Murray and Simcoe Streets to Toronto Harbour.

TORONTO 2. Western Boundary - The Humber River from St. Clair Avenue on the North down to Lake Ontario on the South.

Northern Boundary - From the Humber River on the West along St. Clair Avenue, East to Keele Street, North on Keele Street to Eglinton Avenue, East on Eglinton Avenue to Bathurst Street, North on Bathurst Street to Lawrence Avenue, East on Lawrence Avenue to Mount Pleasant Road, South on Mount Pleasant to Moore Avenue, East on Moore Avenue and East on a projected line through Taylor's Bush Park to O'Connor Drive.

Eastern Boundary - Woodbine Avenue from O'Connor Drive on the North to Queen Street on the South, and East on Queen Street to Lake Ontario.

Southern Boundary - Lake Ontario from the Humber River on the West to Fallingbrook Road on the East.

LYON, de BROUWER & CO. LTD.
Metropolitan Toronto & Region Commuter Study

IDENTIFYING QUESTIONNAIRE

Good .... My name is......... I'm doing a preliminary commuter survey for the Ontario Government.

1\. a) Did anyone in your house go to work four or more days last week?

6-1 YES ☐ → 1. b)

6-2 NO ☐ (END INTERVIEW)

1\. b) How many people in your house went to work four or more days last week?
7 - ________

2\. In what town or city did these people work last week?

(IF DESTINATION AND HOME TOWN COINCIDE, END INTERVIEW)

(Circle number in appropriate square)
8-
9- 10- 11-

3\. What method of travel did these people use to get to work last week?

(Circle number in appropriate square)
12-

PERSONS	Toronto*			Port Credit	Clarkson	Oakville	Bronte	Burlington	Port Union	Pickering	Dunbarton			
1st				1	2	3	4	5	6	7	8	1	2	3
2nd				1	2	3	4	5	6	7	8	1	2	3
3rd				1	2	3	4	5	6	7	8	1	2	3
4th				1	2	3	4	5	6	7	8	1	2	3
5th				1	2	3	4	5	6	7	8	1	2	3

Auto	Public Transit	Train	Other	Don't know
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5

4\. What is your name? ________________________

5\. What is your address? ________________________
(No. & Street) 13- (City/Town)

Thank your very much. We may have to get in touch with you again.

Telephone Number ________________

14- 15- 16-

	Date ____________	1st Call	2nd Call	3rd Call
	Time of Call:			
	Answered	1	1	1
KEEP CALLING	Busy	2	2	2
	No answer	3	3	3
DISCONTINUE	No qualified respondent	4	4	4
	Foreign speaking	5	5	5
	Refused	6	6	6

Interviewer's name ________________________

* IF TORONTO, HAVE RESPONDENT STATE NEARBY MAJOR INTERSECTION AND WRITE IN.

** PUBLIC TRANSIT is Street Car, Bus, Subway, etc.

SECTION VII

APPENDIX B

TELEPHONE QUESTIONNAIRE AND INSTRUCTIONS TO INTERVIEWERS

APPENDIX B

INSTRUCTIONS TO INTERVIEWERS

NO. I PURPOSE OF THIS SURVEY

The purpose of this survey is to determine where people travel to work and how they travel to these places. Do they go by auto, bus, street car, subway etc. or by train?

NO.II PROCEDURE FOR CONDUCTING INTERVIEWS

1) Call only the telephone numbers marked with red pencil on the telephone pages provided for you. Most of these numbers will be residential ones.

2) If the number marked in red is a business number, or if it is disconnected, call another one instead. Pick the nearest residential number either above or below the marked one on your page and call it instead.

3) All numbers are to be called through once. Then a second call is to be made to "No Answer", to "Busy" and to "No Responsible Adult present." A third and final call is to be made for the "No Answer," "Busy" and "No Responsible Adult present". Each call-back must be made at a time of the day different from the time the original or second call was made. Record time and date of call-backs. Do these phone calls between 9 A.M. to 9.30 P.M.

4) A qualified respondent answering the phone is anyone 16 years of age and over. They will be asked to speak of all persons living in the house. If there is a doubt in the interviewer's mind that the respondent may be under 16 years of age, explain to respondent that we are interested in speaking to people 16 years of age and over.

5) Use a separate questionnaire for each phone number called (excluding business or disconnected phones). In case the interview is not completed, record why in the place provided at the bottom of the questionnaire.

6) Return all Questionnaires as well as the telephone pages.

7) Keep in mind that most of your calls will not locate commuters to another city. Don't be discouraged by this because it is important to know what percent of households called contain commuters. in other words, a call to a household without commuters is just as valuable to this study as a call to a household with a commuter in it.

INSTRUCTIONS TO INTERVIEWS (Continued).

NO.III EXPLANATIONS OF THE QUESTIONNAIRE

Q. (1a) The purpose of this question is to find households with one or more people who have a steady job. Occasional workers, workers on shift, half-day workers, etc., are included as long as they went to work at least four or more days in the previous week. Students are not considered as workers. The respondent is included if he is one of the workers.

(1b) This is to help with questions 2 and 3 so that you will know how many people to ask about.

Q. (2) The purpose of this question is to locate households with commuters, i.e., people working in a town or city different from where they live.

NB. For each of the people with a steady job (total in 1b) ask in what town or city they worked last week. If their place of work is in the same town or city as their house, they aren't commuters so don't ask any other questions about them. If every steady worker in the household you call works in the same city as he lives, end the interview.

If Toronto is the place the person works, ask for the major intersection nearest the place of work and write it in the blank space.

Q. (3) This question is to find out how people travel to work. Ask question 3 about each person who was found in Q. (2) to be a commuter.

Q. (4 & 5) Ask these questions of every respondent who has a commuter in his household.

SECTION VIII

APPENDIX C

DEPTH INTERVIEWS

INSTRUCTIONS TO INTERVIEWERS AND TOPICS

APPENDIX C

INSTRUCTIONS TO INTERVIEWERS FOR DEPTH INTERVIEWING

INTRODUCTION OF INTERVIEWER AT THE DOOR.

Good evening, my name is________________________. I'm here on behalf of the Ontario Government. The Department of Highways is studying the problems of commuting from the suburbs to work. Can you spend a while now to talk about travelling by car to work, and about commuting in general?

End of Interview: Thank you for your cooperation.

APPENDIX C

DEPTH INTERVIEW TOPICS

What are present conditions of car travel?

What advantages--what frustrations--highway conditions--safety--tie-ups--time in transit--parking facilities--fatigue--car pools desirable or not, rigid as train schedule?--expense--status:kind of people who travel by car, bus train--does individual see himself travelling by car, bus, train?

Reasons for locating in the suburbs

Importance of home ownership, economics of home ownership -- status of suburban living vs. city living -- escape-isolation--advantages and disadvantages of suburban living -- role of car in decision to locate--

Ideal mode and conditions of travel to and from work

Time, convenience--ideal of modern transit: car, bus train--kind of picture of self as commuter--

Impression of present train commuter service

Good points?--old fashioned--expensive--inconvenient--slow--awkward to get at--no parking facilities at train--no bus service as access to train--kind of person that goes by train now--would individual use the train service as it is now?

Kind of train commuter service that would be ideal

How could it be made attractive enough to leave car behind--ideal time in transit--rates--parking lots--bus service to trains--refreshment stations--music--reading material--decor--time limits--fare limits--

Reaction to Public Transit generally

What kind of travel best for mass transportation--status--economics--convenience?

What are trends in mass transportation--will this person go along with changes or is he sold on his car?

SECTION IX

APPENDIX D

FACE TO FACE QUESTIONNAIRES AND INSTRUCTIONS TO INTERVIEWERS

I
HOUSEHOLD
REPORT

METROPOLITAN TORONTO AND REGION TRANSPORTATION STUDY

PAGE 1.

ZONE CODE ________
SAMPLE NO. ________

WHAT IS YOUR:
A. NAME ______________________ HOME TEL. NO. ________

HOME ADDRESS ______________________

B. HOW MANY PERSONS LIVE AT THIS ADDRESS (DO NOT INCLUDE VISITORS)? . . . . ________

C. HOW MANY ARE SERVANTS LIVING IN OR ROOMERS? . . . . ________

D. HOW MANY VISITORS ARE STAYING AT THIS ADDRESS TEMPORARILY? . . . . ________

E. WHO ARE THE PERSONS 5 YEARS OF AGE AND OLDER WHO LIVE AT THIS ADDRESS? (INCLUDE SERVANTS WHO LIVE IN OR ROOMERS) (RECORD ON CHART BELOW)

Person Identification Number	Person Identification (For example: father mother, son-John, daughter-Mary, boarder roomer)	Check if Inter-viewed	SEX CODE		AGE GROUP (SEE CHART BELOW)	DRIVER'S LICENCE?		OCCUPATION (WRITE IN)		INDUSTRY WHAT TYPE OF BUSINESS OR INDUSTRY IS THAT? (WRITE IN)		BUSINESS ADDRESS
			M 1	F 2		1 YES	2 NO		CODE		CODE	
1	HEAD OF HOUSEHOLD											
2												
3												
4												
5												
6												
7												
8												
9												
10												
98	VISITOR/BOARDER											
99	VISITOR/BOARDER											

Chart									
Age Group	5-10	11-15	16-20	21-25	26-35	36-45	46-55	56-65	Over 65
Code	1	2	3	4	5	6	7	8	9

ZONE CODE ________

SAMPLE NO. ________

F. What type of dwelling unit do you occupy now?
(CIRCLE APPROPRIATE CODE NUMBER)

Single detached	1
Attached (semi-, row-, or maisonette). . .	2
Duplex, 3, 4, 5, 6 Plex	3
Apartment or residential hotel (6 or more apartments)	4
Rooming house (10 or more rooms available as lodgings)	5
Residence attached to business	6

G. In your household how many:

a) passenger cars are owned and available for use ___)
b) company or leased cars are used and garaged ___) by persons at this address?
c) trucks or vans are used and garaged . . . . . ___)

ASK THIS QUESTION AT END OF INTERVIEW

What is the total approximate annual household income?
(Combined wage and salary income of all members of the household, including servants and roomers.)

(CIRCLE APPROPRIATE CODE NUMBER - IF NECESSARY REMIND RESPONDENT ALL INFORMATION IS STRICTLY CONFIDENTIAL)

Under 2,000	1	6,000 - 8,000	4	12,000 - 16,000	7
2,000 - 4,000	2	8,000 - 10,000	5	16,000 - 20,000	8
4,000 - 6,000	3	10,000 - 12,000	6	20,000 & over	9

II
TRIP
REPORT

PAGE 3.

ZONE CODE ________

SAMPLE NO. ________

I would like to get a record of every trip you made the last five consecutive working days you went to work and returned home from work.

1				2		3		4		5		6		7		8		9		10		11	
What were the last five consecutive days you went to work?				What time did you leave this house for work? (WRITE IN TIME)		How many minutes did it take you to get from your house to the vehicle used to go to work? (WRITE IN MINUTES)		What type of vehicle did you use? (WRITE IN)		Were you a driver or a passenger?		How many people including yourself travelled in the same car as you going to work? (WRITE IN APPROPRIATE NUMBER OF PEOPLE)		(IF MORE THAN ONE PERSON) Is this a car pool?		What is the address of the place you left the vehicle? (Point or intersection) (WRITE IN)		Is this address your place of work? (IF YES: GO TO QUESTION 18.) (IF NO: GO TO QUESTION 10.)		Did you use any other type of vehicle to go to work? (IF YES: GO TO QUESTION 18.) (IF NO:GO TO QUESTION 10.)		How many other types of vehicle did you use? (WRITE IN)	
Day	Code	Date	Code		Code		Code		Code	Dvr 1	Psgr 2		Code	Yes 1	No 2		Code	Yes 1	No 2	Yes 1	No 2	One	Two

PAGE 4.

ZONE CODE ____________

SAMPLE NO. ____________

IF ONE OTHER TYPE OF VEHICLE WAS USED						IF TWO OTHER TYPES OF VEHICLES WERE USED															
12		13		14		15		16		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		22	[illegible]
What type of vehicle was it? (Train, Bus, TTC, Street Car) (WRITE IN)		At what point or intersection did you transfer to this other type of vehicle? (WRITE IN)		At what point or intersection did you get off this other type of vehicle? (WRITE IN)		This second type of vehicle, what type of vehicle was it? (Train, Bus, TTC, Street Car) (WRITE IN)		At what point or intersection did you transfer to this second type of vehicle? (WRITE IN)		At what point or intersection did you get off this second type of vehicle? (WRITE IN)		How many minutes did it take you to go from [illegible] where you left the vehicle to where you [illegible] (WRITE IN MINUTES)		What time did you arrive at the place [illegible] you work? (WRITE IN)		[illegible] all factors except parking: how much did it cost you personally to make [illegible] trip? (WRITE IN)		Is there any charge for parking the car in which you travel?		If YES, how much do you pay per [illegible] (WRITE IN)	Do you pay for this parking by the month, week, day or hour? (WRITE IN)
	Code		Code		Code		Code		Code		Code		Code		Code		Code	Yes 1	No 2		

ZONE CODE ______

PAGE 5.

Now I would like to Record your Trips Home from Work.

SAMPLE NO. ______

24		25		26		27		28		29		30		31		32	
What time did you leave work to go home? (WRITE IN TIME)		After leaving work how many minutes did you walk or stop over before getting to the vehicle used to go home? (WRITE IN MINUTES)		At what point or intersection did you get on this vehicle? (WRITE IN)		What type of vehicle was it? (WRITE IN) (IF OTHER THAN CAR, TRUCK OR TAXI, GO TO QUESTION 31)		Were you a driver or a passenger		How many people including yourself travelled in the same car as you going home? (WRITE IN APPROPRIATE NUMBER OF PEOPLE)		(IF MORE THAN ONE PERSON) Is this a car pool?		Did you use any other type of vehicle to go home? (IF NO:GO TO QUESTION 39)		How many other types of vehicle did you use to go home? (WRITE IN)	
	Code		Code		Code		Code	Dvr 1	Psgr 2		Code	Yes 1	No 2	Yes 1	No 2	One	Two

PAGE 6.

ZONE CODE ______

SAMPLE NO. ______

IF ONE OTHER TYPE OF VEHICLE WAS USED						IF TWO OTHER TYPES OF VEHICLES WERE USED									
33		34		35		36		37		38		39		40	
What type of vehicle was it? (Train, Bus, TTC, Street Car) (WRITE IN)		At what point or intersection did you transfer to this vehicle? (WRITE IN)		At what point or intersection did you get off this vehicle? (WRITE IN)		This second type of vehicle, what type of vehicle was it? (Train, Bus, TTC, Street Car) (WRITE IN)		At what point or intersection did you transfer to this vehicle? (WRITE IN)		At what point or intersection did you get off this vehicle? (WRITE IN)		How many minutes did it take you to go from the place where you left the last vehicle to home? (WRITE IN MINUTES)		What time did you arrive at home? (WRITE IN TIME)	
	Code		Code		Code		Code		Code		Code		Code		Code

PAGE 7.

ZONE CODE ______

SAMPLE NO. ______

Now, I would like to find out about trips taken by members of your household for purposes other than work.

Did anyone in your household make a trip of under 30 miles in length to any destination other than your home town during the last seven days for purposes other than work?

(YES ☐ 1 NO ☐ 2

→IF YES, FILL IN FORM BELOW

Date of Trip			Time of Departure (WRITE IN TIME)		Time of Return (WRITE IN TIME)		Destination (WRITE IN NEAREST STREET INTERSECTION, TOWN OR CITY IF KNOWN)		Purpose of Trip (USE CODE SHOWN IN CHART A BELOW)	Number of Vehicles Used to Make Trip (WRITE IN NUMBER)	Type of First Vehicle Trip was Made In (USE CODE SHOWN IN CHART B BELOW)	Type of Second Vehicle Trip was Made In (USE CODE SHOWN IN CHART B BELOW)
Day	Date	Code		Code		Code		Code	Code		Code	Code

Chart A
Purpose of Trip

Code	Purpose
(1)	Personal Business
(2)	Shopping
(3)	University, Technical or High School Students
(4)	Social
(5)	Recreation
(6)	Other

Chart B
Type of Vehicle Used

Code	Type of Vehicle
(1)	Car/Truck Driver
(2)	Car/Truck Passenger
(3)	Car Pool
(4)	Public Transit (TTC, Grey Coach, etc.)
(5)	Railway
(6)	Other, e.g., Taxi

ZONE CODE ________

SAMPLE NO. ________

Now I would like to get your views on why you use a car to go to and from work. On each card in this deck there is a possible reason why a person uses a car to go to and from work rather than some other mode.

If any reason is a very important one for you in using a car, place it under number 1.

If any reason is not important at all, place it under number 7.

If any reason is moderately important, place it somewhere between 1 and 7, according to its importance.

You can place as many cards as you want under any number.

If you change your mind after you have already rated a reason, don't hesitate to change its position on the scale.

INTERVIEWER NOTE: RECORD BELOW ANY VERBATIM FACTORS RESPONDENT CONSIDERS VERY IMPORTANT.

INTERVIEWER NOTE · AFTER RESPONDENT HAS PLACED ALL THE CARDS ON THE SCALE, RECORD HIS DECISION FOR EACH CARD ON THE GRID BELOW BY MEANS OF AN (X)

Factor Identification Letter	Scale Number						
	1	2	3	4	5	6	7
A							
B							
C							
D							
E							
F							
G							
H							
I							
J							
K							
L							
M							
N							
O							
P							
Q							
R							

APPENDIX

Question III-A

SCALE

REASONS FOR GOING TO AND FROM WORK BY CAR IS

VERY IMPORTANT NOT IMPORTANT AT ALL

1 2 3 4 5 6 7

FACTORS

A. There is no one around to bother me when I commute by car.

B. I like the company of friends when commuting by car.

C. Commuting to work by car gives me a feeling of independence.

D. My friends travel to and from work by car.

E. I own a car so I might as well use it to commute.

F. I am not "tied" to schedules.

G. I live too far from the bus or train stations to use the bus or train.

H. It is enjoyable to drive to and from work by car.

I. Car radio provides entertainment while commuting.

J. I have the car whenever I want it during the day.

K. I need my car while at work.

L. No transfers are necessary when commuting by car.

M. More packages or parcels can be carried when commuting by car.

N. Car is safer than rail or bus.

O. Commuting by car is cheaper than commuting by rail or public transit.

P. Car is faster than rail or public transit.

Q. Car is the only way I can get to and from work.

R. I work too far from the bus or train stations to use the bus or train.

III B

PAGE 9.

ZONE CODE ________

SAMPLE NO. ________

<u>INTERVIEWER NOTE</u> : AFTER RESPONDENT HAS PLACED ALL THE CARDS ON THE SCALE, RECORD HIS DECISION FOR EACH CARD ON THE GRID BELOW BY MEANS OF AN (X)

Car travel also has some drawbacks for some people. Here is a deck of cards listing disadvantages of car travel for going to and from work. Place each card on this disadvantage scale, like you did just before.

If a disadvantage is a very great disadvantage to you, place it under number 1.

If it is not a disadvantage at all, place it under number 7.

You can place as many cards as you want under any number.

If you change your mind after you have already rated a reason, don't hesitate to change its position on the scale.

<u>INTERVIEWER NOTE:</u> RECORD BELOW ANY VERBATIM FACTORS RESPONDENT CONSIDERS A VERY GREAT DISADVANTAGE.

Factor Identification Letter	Scale Number						
	1	2	3	4	5	6	7
A							
B							
C							
D							
E							
F							
G							
H							
I							
J							
K							
L							
M							
N							
O							
P							
Q							
R							
S							

APPENDIX

Question III-B

SCALE

TO ME, THIS IS A

VERY GREAT DISADVANTAGE IN USING THE CAR						NO DISADVANTAGE AT ALL USING THE CAR
1	2	3	4	5	6	7

FACTORS

A. Traffic tie-ups make driving disagreeable.

B. Commuting by car is dangerous.

C. Heavy traffic makes driving disagreeable or difficult.

D. Parking space is difficult to find.

E. Driving is sometimes difficult when the weather is bad.

F. It takes too long to commute by car.

G. All factors considered, it is expensive to commute by car.

H. Commuting contributes to excess wear and tear on the car.

I. Driving to and from work every day is a chore.

J. Other drivers frustrate me.

K. Mechanical failures in the car can happen while commuting.

L. Parking is costly.

M. Commuting by car makes me nervous.

N. Commuting by car is tiring.

O. Commuting by car is not comfortable. It is often too hot or too cold.

P. Car insurance costs more when the car is used to commute.

Q. When I drive to and from work I have to worry about passengers.

R. When commuting by car one is almost compelled to be sociable with fellow passengers.

S. The car driver can never read a paper while commuting.

III C

PAGE 10.

ZONE CODE ________

SAMPLE NO. ________

Now I would like to find out what features, if any, of a commuter train would be attractive enough to you so that you would use it rather than a car.

On each card in this deck are features that might make a commuter train service attractive to you.

If a feature is very attractive to you, place it under number 1.

If a feature is not attractive at all, place it under number 7.

If any feature is moderately attractive place it somewhere between 1 and 7.

You can place as many cards as you want under any number.

If you change your mind after you have already rated a condition, don't hesitate to change its position on the scale.

INTERVIEWER NOTE: RECORD BELOW ANY VERBATIM FACTORS RESPONDENT CONSIDERS A VERY ATTRACTIVE FEATURE.

INTERVIEWER NOTE. AFTER RESPONDENT HAS PLACED ALL THE CARDS ON THE SCALE, RECORD HIS DECISION FOR EACH CARD ON THE GRID BELOW BY MEANS OF AN (X)

Factor Identification Letter	Scale Number						
	1	2	3	4	5	6	7
A							
B							
C							
D							
E							
F							
G							
H							
I							
J							
K							
L							
M							
N							
O							
P							
Q							
R							
S							
T							
U							
V							
W							
X							
Y							
Z							
AA							
BB							
CC							
DD							
EE							
FF							
GG							
HH							
II							
JJ							

APPENDIX

<u>Question III-C</u>

SCALE

TO ME, THIS IS A

VERY ATTRACTIVE FEATURE OF COMMUTER TRAIN TRAVEL						VERY UNATTRACTIVE FEATURE OF COMMUTER TRAIN TRAVEL
1	2	3	4	5	6	7

FACTORS

A. If a family plan was available to train commuters at a special rate.

B. If weekly or monthly tickets were available at a special rate to train commuters.

C. If students were allowed to travel at reduced rates.

D. If train commuters could transfer at a reduced rate to public transit.

E. If train fares were about the same as public transit fares.

F. If train fares were slightly more expensive than public transit fares.

G. If the total cost of commuting by train was cheaper than the total cost of commuting by car.

H. If the total cost of commuting by train was about the same as the total cost of commuting by car.

I. If the total cost of commuting by train was slightly more expensive than the total cost of commuting by car.

J. If parking were available at the train station.

K. If <u>free</u> local buses ran to and from the train station in my home area.

L. If the train took about the same time as public transit.

M. If the train took more time than public transit.

N. If the train took less time than public transit.

APPENDIX

Question III-C (continued)

FACTORS (continued)

O. If the train took less time than car.

P. If the train took more time than car.

Q. If the train took about the same time as car.

R. If local buses ran to and from the train station in my home area, at present charges.

S. If there was a special service for hockey games, and other sport and theatre events.

T. If there was a weekend train service.

U. If there was a late evening train service.

V. If the train provided frequent service during the morning rush hours.

W. If the train provided frequent service during the evening rush hours.

X. If a modern up-to-date train station was provided.

Y. If a train platform provided shelter from the weather.

Z. If the trains had clean cars.

AA. If the trains had enough seats for all their passengers.

BB. If trains had adjustable seats.

CC. If the trains had air conditioned cars.

DD. If reading material was available on trains.

EE. If the trains had a club car service in morning which could provide coffee or breakfast.

FF. If the trains had a car service which could provide refreshments in the evening.

GG. If there was no crowding or pushing getting on or off the trains.

HH. If there was music on the train.

II. If the train ticket could also be used on public transit.

JJ. If the trains provided reserved seats at a higher cost than non-reserved seats.

III D

PAGE 11.

ZONE CODE ________

SAMPLE NO. ________

1.) Would you please tell me how much time you think a train should take, under ideal conditions, to get you from your home to your place of work?
(WRITE IN) ____________

2.) If the train provided all the features you considered attractive, would you please tell me how much you would be prepared to pay for each trip from your home to your place of work?
(WRITE IN) ____________

3.) During rush hours, how often do you think the trains should run from your home station to your place of work?
(WRITE IN) ____________

4.) During non-rush hours, how often do you think the trains should run from your home station to your place of work?
(WRITE IN) ____________

5a) If railways provided all the services that you have considered to be very attractive, how many trips, if any, to and from work per week would you take by train rather than by car?
(CIRCLE ONE)

Trips	Trips	Trips
1	8	15
2	9	16
3	10	17
4	11	18
5	12	19
6	13	20
7	14	

5b) Even if the railways provided all the services I consider attractive, I would still commute by car rather than by train.
☐ (Check ✓)

INTERVIEWER NOTE: NOW TURN BACK TO PAGE 2 AND ASK QUESTION ON INCOME

SURVEY OF AUTO USERS TRAVEL HABITS AND ATTITUDES

INSTRUCTION MANUAL

FOR

METROPOLITAN TORONTO AND REGION TRANSPORTATION STUDY

Prepared by

LYON, de BROUWER & CO. LTD.
2045 BISHOP ST., MONTREAL, P.Q.

MAY, 1964

METROPOLITAN TORONTO AND REGION TRANSPORTATION STUDY

INSTRUCTION MANUAL

1. PURPOSE OF SURVEY

The purpose of this survey is to collect information on travel habits and attitudes of auto drivers living in suburban areas around Metropolitan Toronto and working in Metropolitan Toronto and its surrounding region. The data collected includes information on auto trip origins and destinations, other method of travel used, in addition to auto, and time of day during which these trips are made, as well as attitudes of car users towards car travel. These data form the basis for establishing an experimental train commuter service to serve suburban areas, and estimating the market among auto drivers for such a service.

The survey includes the suburban areas of Metropolitan Toronto. To the west the survey area includes Mimico, Port Credit, Oakville and Burlington, to the east, Danforth, Scarboro, Dunbarton, Pickering and Ajax. The survey area contains a population of approximately 2.5 million residents. Since the travel habits of persons living in the same area are in many ways similar, it is possible to obtain accurate estimates of all travel in the area by selecting a representative sample of households from which to collect travel information. This information is collected by interviewing people in their homes through face-to-face contact. In this manner information on trips made during one working week by residents of the selected household is obtained.

Since the results of one interview will be representative of the travel habits of 30 to 40 households it is extremely important to obtain accurate and complete information for each household interviewed. In the final analysis, the success of future transportation planning in the area depends in no small part on how well the interviewers carry out their duties.

Performance Standards

At all times it is essential that interviews be conducted in a businesslike manner. Discussion of matters not directly related to the questionnaire should be minimized and an attempt should be made to acquire all the necessary information in as short a time as possible. At the same time it is imperative to remember that householders are under no obligation whatsoever to participate in this study. Those persons refusing to cooperate in the study have every right to do so and must be treated in a polite and courteous manner at all times. However, DO NOT ENCOURAGE refusals.

From time to time your work will be rechecked by spot checks of the households already interviewed. Such procedures are standard in surveys of this nature to help ensure the quality and accuracy of the work, and to ensure that interviewers are behaving in a proper and businesslike manner.

GENERAL INSTRUCTIONS FOR FILLING OUT QUESTIONNAIRES

For each dwelling unit selected in the sample, three different sections are to be completed in the following order:

1. Household report (except for inquiry about income which is to be done at the end of the interview) -- one per household.

2. Trip reports.
   a. Work trip reports to and from work--for each person who went to work by car--all work trips taken in the last five consecutive working days.

   b. Non-work trip reports --all trips taken by any person in household, high-school age and over, for purposes other than work. these trips must be under 30 miles in length, to destinations other than the respondent's hometown.
3. Attitude study--these questions to be answered only by each person in the household who has filled out work trip reports.

4. Present card for enquiry about total income of household (this is part of No.1.)

1. HOUSEHOLD REPORT

One form is completed for each household interviewed. The following items will be entered when the sample household is selected:

Zone - this will be assigned to the interviewer

Sample No. - each sample of the zone is numbered in sequence, 1,2,3, etc.

Fill in Zone and Sample No. on each page.

The other questions on the form are to be completed during the interview.

a. Name of respondent - a person in the household who goes to work by car.

b. How many persons live at this address?

- Enter the total number of persons living at the household, 5 years of age and older. Domestic and other employees should be included if they sleep on the premises. Members of the family in hospital, temporarily away from home (except students) should be included unless they have established a definite residence elsewhere. Persons who are living elsewhere while attending school, or while in the military service, or those who are working abroad, or are inmates of an institution should not be included. Visitors in the household at the time of the interview should be included.

c. How many are servants living in or roomers?

- Domestic employees residing in the dwelling unit should be included. Roomers and lodgers should also be included provided not more than 10 separate rooms are provided for these lodgers.

d. How many visitors are staying at this address temporarily?

- Use code 98 and 99 for visitors and boarders. It is not likely that visitors will have made trips to work in the last week. However, record non-work trips by visitors on Page 7.

List the persons 5 years of age or older at this address

Include domestics who live in, roomers, and visitors who live outside the survey area but are temporarily staying at this address. Each person's identification, i.e. "father", should be listed in the appropriate column provided on the Household Report form. The order of listing members of the family does not matter, except that the head of the household must be recorded as person No.1. Visitors living within the survey area should not be recorded, but those living outside the survey area should be entered in the spaces below person No.10. All such visitors should be assigned person numbers 98 or 99.

f. Type of dwelling occupied now - Enquire about duplexes and larger multiple dwellings.

g. How many passenger cars are owned by persons at this address?

(a) - Enter the total number of passenger cars owned by all residents of the household. Include station wagons and jeeps as passenger cars. Include vehicles available for operation as well as those in operation (Exclude "junked" vehicles.)

Include those on which purchase payments are still being made. Do not include trucks in answer to this inquiry because they will be obtained below.

(b) How many company or leased cars used and garaged here?

Include all passenger cars owned by employers of members of the family, if such vehicles are garaged on the premises. Include all leased passenger cars. Do not include trucks.

(c) How many trucks and vans used are garaged here?

Include here all trucks and vans used by members of the household (owned either by the members or their employers) which are garaged on the premises.

Inquiry about Income of House Members

This inquiry should be made just before ending the interview. Some people may be reluctant to give this information and this reluctance, if present, is usually stronger at the outset of the interview than at the end. Be sure total income includes that of servants and roomers.

A household is a group of rooms occupied as separate living quarters by a family or other group of persons, usually having private cooking facilities available. e.g. A single family home contains one household, a duplex contains two households, an apartment building contains many households.

Special cases:

1. Usually a household includes persons related by blood or marriage; however, domestic employees who reside in an employer's house should be included with the employer's household;
2. A household may occupy a single family residence but include extra people such as a lodger; in such cases all occupants should be included as though they were members of the household;
3. Many buildings primarily devoted to non residential use contain households, e.g. above a store.

Separate forms are to be completed for each household.

One Household Report is to be completed for each household where interviews are made. It is important to note that a separate Trip Report form must be used for each person who goes by car to and from work, even if he goes only part of the way by car, regardless of whether he is driver or passenger.

Inquiries are placed on the interview form in the most desirable order for conducting an interview. With a little practive however, each interviewer will develop a certain technique in asking questions which is best suited to the interviewer. In most cases inquiries may be stated briefly, somewhat as phrased on the form, but there will be instances (such as reluctance to answer a question by the person being interviewed; an error indicative of a misunderstanding, or an illogical answer), when a few words or a brief explanation will be necessary to correct the answer or put the person at ease.

The interview form has been developed so that many entries are made by simply circling a number that refers to the appropriate answer; for the remaining inquiries it is necessary to record only a figure or a few words to complete the answer. This procedure reduces the work of coding the data for punching on tabulating cards in preparation for subsequent analysis.

The following sections give detailed instructions on filling out each of the forms involved.

The following additional information will assist you in completing the columns of the Household Report form.'

Person Identification

This information is primarily for use of the interviewer and office use only. Enter only short terms as Head of Household, housewife, son, daughter, uncle, aunt, cousin, roomer, maid, butler, visitor, etc. In case there are several children in the family it will be satisfactory to use first names as Mary, John, Ruth, etc.

If Interviewed

Enter a check mark (/) for each member of the household high school age or older who is personally interviewed, or who was present at the time of the interview.

Sex

The interview takes place in the home so do not ask this question; it can be determined by observation.

Age

If a person is unwilling to state their age range the appropriate range can usually be estimated by the interviewer or otherwise disregard.

Driver's Licence

If a person has a drivers licence record this as Yes and Mark (X). Otherwise mark (X) under the No. column.

Occupation

Sometimes it may be preferable to defer this inquiry until the end of the interview, and, if possible, to avoid asking a direct question. Very often the person being interviewed may volunteer the information in the course of other questions, or it may be deduced from remarks made during the interview. Some persons are sensitive about such questions and it is better to first obtain the other information which is not

quite so personal. Experience shows however, that people generally have no objection to classifying their work in the impersonal terms requested in the subsequent paragraphs.

The commercial name of the concern where a person works is not required and need not be recorded unless it will facilitate the interview.

The purpose of the occupational entry is to describe the specific type of work performed. Before finally entering the occupation, be convinced that it specifically answers the question, "what does he or she do?" (e.g. stenographer, janitor, bus driver, retired, engineer, housewife). The occuption of a sick person should be recorded. The occupation of visitors need not be obtained.

Industry

The purpose of the industrial entry is to specify the industry, or type of business in which a person is employed. Before finally entering the industry, be convinced that it specifically answers the question, "In what industry or kind of business does he or she work?" (e.g. railroad, newspaper, education, manufacturing, wholesaling).

Business Address

Number and Street of place of employment e.g. factory, shop, office, construction site.

2. TRIP REPORTS

a) Work trips to and from Work

The purpose of the trip report is to obtain detailed information from members of the household who use a car to go to and from work. We wish to have information about leaving time, time of arrival and departure at work, type of vehicle used to get home, time of arrival at home, etc. This information will be used to establish an experimental commuter train service in the area. A separate trip report is to be filled in for each prescribed person who goes to work by car.

Trips to work applies to trips made to the location of a person's place of employment, such as a factory, a shop, a store, or an office; and also to locations such as construction sites where an individual performs a normal days work.

Salesmen and doctors will be excluded from the sample as far as possible.

Trips to and from work are to be recorded for the respondent's last five working days. Disregard the word "consecutive". In the words, Saturday, Sunday and Holidays may be included if the respondent worked aby of those days.

A record of five working days travel will yield information about that person's typical travel behaviour for one working week.

IMPORTANT -- PLEASE NOTE:

For each of the questions ask about the last working day first, then enquire about the previous four days worked. If a person has difficulty remembering, help him by enquiring about differences that may have occurred the previous four days.

TRIPS TO WORK

1. List day and date of last five working days.

2. Write in time of leaving the house for work in hours and minutes. e.g. 8:05, 8.20, a.m., or p.m.

3. Record time in minutes taken to get from the house to boarding of the vehicle, e.g. house to car, house to pool car. If person goes from house to adjoining garage ask for an estimate in minutes.

4. Type of vehicle may be car, truck, taxi.

5. Record if driver or passenger, Check appropriate column.

6. Number of Persons in car INCLUDING DRIVER. Enter the total number of persons, INCLUDING THE DRIVER, children and babies, that were carried on the trip. The minimum is 1 when only the driver makes the trip. Seldom will an entry exceed 6, since few cars have capacities of more than 6 persons. Include all persons riding in the car even though they are not members of the household being interviewed.

7. If more than one person--was it a car pool? A car pool may be the pooling of several cars, each owner taking his turn driving for a period of time. It may be one car owner and/or driver who picks up passengers who share the cost of rides to and from work.

8. At what address did respondent leave or get out of the car? This may be a land mark, an intersection, a parking lot, a point of transfer to another mode, or may be the person's place of work. Describe the location briefly.

9. Is this the place of work? If (YES) for all 5 days, go to Question 18 which asks about completion of the trip. If (NO) for any day go to Question 10 and complete Question 10 to 18 which asks about changes to other modes.

10. Did respondent use any other type of vehicle to go to work? Place check mark (/) in appropriate column. If (NO) go to Question 18 to record completion of trip. If (YES) go to Question 11.

11. How <u>many</u> other types of vehicles were used? Record a maximum of two other types.

Questions 12 to 14 are then asked if one other type of vehicle was used and questions 12 to 17 are asked if two other types of vehicles were used.

If One Other Type of Vehicle Was Used

12. Record type of vehicle.

13. Record point or intersection where the transfer was made to this other type of vehicle.

14. Record point or intersection where person left this type of vehicle.

If Two Types of Vehicles Were Used

15,16,
17. See instructions for questions 12, 13 and 14 and apply to the second type of vehicle.

18. How many minutes walked from the vehicle (or last type of vehicle used) to place of work? Record the actual number of minutes.

19. Time of arrival at the place of work in hours and minutes. e.g. 9:10, 9:15, a.m., or p.m.

QUESTIONS 20-23 INCLUSIVE COST OF TRIPS

20. Ask for cost of trip excluding parking cost. Record in dollars and cents. What doesn't cost out of pocket-- deducting any contribution from passengers. In the case of a car pool where no money is exchanged ask for estimate of what he feels is the cost per trip.

21. Determine if there was any payment for parking. Record by check mark (/) in the appropriate column.

22. Write in cost per trip for parking.

23. Determine whether payment for parking was made by the hour, day, month, or week.

TRIPS HOME FROM WORK - For each question inquiry must be made for the last day worked and then for the four previous days work in hours and minutes. e.g. 5:05 5:30 a.m. or p.m.

25. Record minutes walked or stopped over for shopping etc. before getting into first vehicle used to go home. If stop over is given in hours convert to minutes and record e.g. 1½ hours - record 90 minutes.

26. Record point or intersection where respondent entered Vehicle. This may be a parking lot, his address of work, or an intersection. This may be the same location as in Question 8:

27. Record type of vehicle. This may be car, truck, taxi, bus, streetcar, etc. If car continue normal order of questions. If other than car, Truck or Taxi go to Question 31 and proceed to record other modes and transfers.

28. If car record if driver or passenger place check mark (/) in appropriate column.

29 Record number of people <u>including</u> respondent travelling in the same car going home. Entry will seldom exceed six. See instructions for Question 6.

30. If more than one person, was it a car pool? Place check mark (/) in appropriate column.

31. Was any other type of Vehicle used to go home, train, bus, etc. streetcar, other?

If no, go directly to Question 39 to record the completion of the trip. If YES ask No.32.
Ask for number of other types of Vehicles used. Record a maximum of two types of vehicles used.

32. Questions 33 to 35 are then asked if one other type of vehicle was used, and questions 33 to 38 are asked if two other types of vehicles were used.

33-38. IF ONE OTHER TYPE VEHICLE USED - Questions 33-35 see instructions for Questions 12-14 in work trip report.

IF TWO OTHER TYPES OF VEHCILES USED- Questions 36-38 see instructions for Trip to Work - Questions 15-17 record type of vehicle, point of transfer to this vehicle, point of leaving this vehicle.

39. Record number of minutes walked from the last Vehicle to home.

40. Time of arrival at home.
In hours and minutes e.g. 6:05 a.m. or p.m.

NON-WORK TRIP REPORTS

The purpose of this report is to determine the number and nature of trips taken outside the home area for reasons other than work. This will give information necessary for scheduling a commuter train service during off peak hours.

Interviewer will record all non-work trips, even if more than one trip occurs on the same day. Fill in one form for each person who has made at least one such trip.

Time of Departure and Time of Return

Record times in hours and minutes. Specify a.m. or p.m.

Purpose of Trip

Ask for purpose of trip and write in code number according to Chart A. The following notes will help in coding.

"Personal Business", (Code 1) refers to trips made to complete transactions not considered part of a person's regular employment. Trips to the dentist or doctor, notory etc. fall in the category of "personal business"

"Shopping", (Code 2) refers to a trip made to do some shopping, regardless of the size of the purchase. Trips made to a store for the purpose of "just looking" are classed as shopping even though no purchase is made. Trips made for repairs to automobiles, radios, or other items, and for personal service such as haircuts, beauty treatments, cleaning and pressing clothes, etc., also should be recorded as shopping. Trips made to eat a regular meal (but not trips for refreshments) should also be included.

University, Technical, or High School Students (Code 3) refers to students who are actually attending school. This includes high schools, universities, colleges, night schools, etc. Students under high school age are not included. Teachers and employees at such institutions would be reported as going to "work".

"Social", (code 4,) applies to trips to visit friends, attend a meeting, a wedding, a party, etc.

"Recreation", (code 5,) applies to outings, trips to the golf course, for fishing, to the Theatres, movies, pleasure riding, continual events, hockey games.

3. ATTITUDE STUDY

The scales and questions that make up this section are to be presented to each person in the household who filled out trip reports to and from work. Do not present to persons making trips for purposes other than work.

The purposes of this part of the survey is to determine the car users' attitudes towards travel by car and to find out what conditions or features will draw car users from their cars to using a commuter train service.

III A. Find scale III A, coloured black on white and find matching deck of cards for scale III A. This scale applies to reasons for going to and from work by car. Place the scale so that it faces the respondent. Read directions and make sure they are understood. Hand the respondent the deck of cards to be placed on the scale. Allow time for the respondent to make changes. After the respondent has made final decisions for all the cards, record his decisions carefully on the grid with X's. Do not score verbatim responses on the grid, but write very important ones in the space provided.

III B. Find scale III B, coloured blue or white and find cards coloured black on blue. This scale refers to disadvantages of using a car to go to and from work. Proceed as for scale III A.

IIIC. Find scale III C, coloured yellow on white and cards coloured black on yellow. This scale has features that would make a train commuter service attractive to car users. Proceed as for scale III A.

III D. These questions are designed to get specific commitments from car drivers so that costing, time scheduling and estimating numbers of passengers who will use the commuter service may be worked out as accurately as possible.

Finally, inquire about income, Page 2.

SECTION X

APPENDIX E

RAW DATA TABLES

APPENDIX

TABLE 1

NUMBER OF HOUSEHOLDS INTERVIEWED BY TELEPHONE HAVING "IN-SCOPE" WORKERS, "OUT OF SCOPE" WORKERS AND NO WORKERS, BY ORIGIN ZONE

HOUSEHOLDS INTERVIEWED HAVING	ORIGIN ZONE							
	A	B	C	D	E	F	F_1	TOTAL
"In-scope" Workers	264	487	1253	585	340	425	98	3452
"Out of scope" Workers	1416	1045	971	734	261	474	78	4979
No Workers	158	178	318	212	138	72	17	1093
Number of households	1838	1710	2542	1531	739	971	193	9524

TABLE 2

NUMBER OF "IN-SCOPE" WORKERS INTERVIEWED USING EACH TRAVEL MODE SHOWN BY ORIGIN ZONE

MODE	A	B	C	D	E	F	F_1	TOTAL
Automobile	262	516	1269	701	376	472	113	3709
Public Transit	7	23	153	154	304	125	8	774
Train	4	38	94	7	1	4	0	148
Other Modes	2	2	15	2	10	3	1	35
Number of "In-Scope" Workers	275	579	1531	864	691	604	122	4666

APPENDIX E

TABLE 3

DISTRIBUTION BY ORIGIN AND DESTINATION ZONES OF "IN-SCOPE" WORKERS WHO COMMUTE BY CAR

(TELEPHONE SURVEY)

	ORIGIN ZONE							
DESTINATION ZONE	A	B	C	D	E	F	F_1	TOTAL
A (Burlington)	-	9	4	1	1	-	-	15
B (Oakville)	194	-	107	11	2	2	-	316
C (Port Credit)	21	146	-	68	7	1	-	243
D (Mimico)	-	118	453	-	5	6	1	583
TORONTO 1 (see Note)	31	128	291	257	165	271	48	1191
TORONTO 2 (see Note)	16	111	403	356	193	192	33	1304
E (Danforth)	-	-	-	-	-	-	6	6
F (Scarboro)	-	4	11	6	-	-	25	46
F_1 (Ajax, Pickering)	-	-	-	2	3	-	-	5
Number of workers	262	516	1269	701	376	472	113	3709

NOTE:- For explanation of terms "TORONTO 1" and "TORONTO 2" see Appendix A, Page 25.

APPENDIX E

TABLE 4

PROJECTED NUMBER OF "IN-SCOPE" WORKERS BY ZONE OF ORIGIN AND BY MODE

ORIGIN	ESTIMATED LIMITS	MODE OF TRANSPORTATION				
		AUTO(1)	PUBLIC(2) TRANSIT	TRAIN(2)	OTHER(2)	TOTAL(2)
A	Upper	1943	95	65	41	2045
		1739	48	27	14	1828
	Lower	1555	20	9	7	1630
B	Upper	3440	217	333	38	4855
		3165	147	243	13	3568
	Lower	2915	96	173	6	3295
C	Upper	9256	1249	805	169	11210
		8791	1080	663	106	10640
	Lower	8341	931	543	63	10110
D	Upper	20651	5370	432	213	25761
		19091	4620	210	60	23981
	Lower	17589	3930	84	6	22361
E	Upper	11674	10320	170	559	21650
		10487	9240	30	304	20061
	Lower	9423	8270	3	143	18580
F	Upper	23659	8120	560	482	31205
		21299	6860	219	164	28542
	Lower	19104	5760	55	33	26055
F_1	Upper	3440	438	103	155	3743
		2858	222	0	28	3108
	Lower	2358	94	0	3	2553
TOTAL	Upper	70610	24062	1867	1149	95428
		67430	22217	1392	689	91728
	Lower	64490	20582	1141	469	88278

(1) 95% Confidence Limits shown

NOTE:- Adjustments were made after face to face survey showed up misreporting by 5% of the telephone survey respondents.

(2) 90% Confidence Limits shown.

APPENDIX E

TABLE 5

NUMBER OF RESPONDENTS WHO SAID THEY WOULD TAKE THE TRAIN RATHER THAN CAR IF TRAIN PROVIDED ALL SERVICES CONSIDERED ATTRACTIVE, BY ZONE OF ORIGIN (Question 5b of Questionnaire, Page 45, Appendix D)

ZONE OF ORIGIN	RESPONDENTS WHO SAID THAT IF TRAIN PROVIDED ALL SERVICES CONSIDERED ATTRACTIVE THEY WOULD:				TOTAL ALL RESPONDENTS	
	TAKE TRAIN		NOT TAKE TRAIN			
	No.	%	No.	%	No.	%
A. (Burlington)	87	76	28	24	115	100
B. (Oakville)	165	76	51	24	216	100
C. (Port Credit)	164	77	48	23	212	100
D. (Mimico)	112	70	49	30	161	100
E. (Danforth)	29	45	35	55	64	100
F. (Scarboro)	96	84	18	16	114	100
F_1 (Ajax, Pickering)	54	84	10	16	64	100
TOTAL	707	75%	239	25%	946	100%

ATTITUDE AND MOTIVATION STUDY
OF AUTOMOBILE COMMUTERS
WHO TRAVEL TO WORK FROM
SUBURBAN AREAS IN AND AROUND
METROPOLITAN TORONTO

ADDENDUM

SECTION V

ESTIMATES OF POTENTIAL RAIL COMMUTER MARKET

Prepared by:
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November, 1964

Prepared for:

De Leuw Cather & Company of Canada Ltd.

INTRODUCTION

This estimate of the potential rail commuter market was made by taking the number of respondents from the attitude questionnaire who said they would take train trips and who rated the four factors O, V, G and W (described in Table I, page 9 of the report) as very attractive, and then finding out how many of these respondents would take the train for various conditions of desired cost, time and frequency of service (as asked in questions 1-4, page 45 of the report).

ASSUMPTIONS AND LIMITATIONS

This analysis is based on the 707 respondents who said they would take (at least) one trip by train if all the features they considered attractive were provided. These respondents also satisfy the following conditions:

a). they rated all the four factors O, V, G and W as very attractive, i.e. they placed these four factors under 1 or 2 on the rating scale.

b) they moved from the predefined zones to Toronto 1 or 2 as the final destination.

As mentioned above, this analysis is based on those 707 respondents who said that they would take (at least) one trip by train, providing all the features they considered attractive were provided. For the purpose of this analysis, the assumption is being made that these same respondents would take trips even if only the four features that obtained the highest scores were provided. This rests on the further assumptions that (1) these same respondents would not take the train if these four features were not provided and (2) the general assumption that a greater number of people would take the train if these four most important features were provided, relative to the number of people who would take the train if these features were not provided. This does not mean

necessarily that these respondents will not take the train if one or more of these four features is not provided.

It must be noted that, since question 3, page 47 of report, asked only for desired frequency of service and did not distinguish between morning and evening rush hours, it was decided to combine factors V and W. Both received very similar scores (86% and 85% respectively) and both were concerned with the attractiveness of frequency of service during rush hours. While factors V and W were sorted separately, they were combined for the purposes of the analysis. This combining of factors assumes further that during morning and evening rush hours, the frequency of service or headway would be the same.

It should be remembered that the number of rail commuters derived for a given combination of conditions of cost, trip time and headway applies to conditions of this combination, i.e. any increase in these values would eliminate some commuters, but any decrease on these values would attract the same number and more commuters. For example, if it is found that 10 respondents will take trips under conditions of:

Trip time	cost	headway
40 min.	60¢	20 min.

and the cost is changed to 61¢, this system of analysis assumes that only respondents who said they would pay 61¢ or more under these conditions of headway and trip time will take trips. On the other hand, if the cost is changed to 59¢, there will be 10 respondents plus those who were willing to pay 59¢ under the same conditions of trip time and headway. This applies also to changes in trip time and headway. This is true literally for this analysis but in actuality the number of rail commuters may not change at all with a slight change in price. The literal use of these estimates also rests on the assumption that respondents will in fact carry out intentions as stated in the questionnaire.

RESULTS

DERIVATION OF ESTIMATES

Table I, page 4, gives three different estimates of the number of potential rail commuters. The first represents the number of potential rail commuters which could be obtained for those combinations of conditions of trip time, cost and headway desired by respondents in the questionnaire. The distribution of rail commuters for each origin zone (see Note 1 below) are plotted on graphs in the appendix, the first graph shown represents the number of potential rail commuters for that zone. The remaining graph show how this potential number would change when different headways (see Note 2 below) are applied.

Estimate II and III were obtained by applying to these graphs two other schedules of trip time and cost and headway and counting the number of respondents (each represented by a dot or numeral denoting more than one respondent) in the upper right hand section of the graphs. This number is then multiplied by the appropriate projection factor shown for each zone as given in Table I. By using the graph in this manner, other estimates can be derived for other combinations of trip time, cost and headway.

DISCUSSION OF ESTIMATES DERIVED

The first estimate of 26,806 represents the number of potential rail commuters that could be obtained from the combination of conditions desired by the respondents.

While it is true that this represents the desires of the respondents, it would be difficult to attempt to satisfy such demands as providing a 10 minute trip time from both zones C and D to Toronto.

The second estimate of 7,872 was obtained by applying to the graphs the schedule proposed by your traffic engineers as being the most likely conditions of trip time, cost and headway. The proposed trip times and cost were applied to the graphs showing distributions of potential number of rail commuters for a headway of twenty minutes or more.

For the third estimate of 16, 358 the same schedule as proposed by the traffic engineers was applied to those graphs showing distributions of potential number of rail commuters for a headway of fifteen minutes or more. It is interesting to note that an increase in headway of five minutes produced substantial increases in zones D, E and particularly zone F and more than doubled the estimate of potential rail commuters.

NOTE 1. The origin zones in the estimates and the graphs are those described on page 24 of the report. In some zones there may be more than one train station. Since in these zones it is not known which station would be used, the trip time and cost for the furthest station to Toronto 1 and 2 has been used in the calculation of estimates. Thus the following stations have been included:

Zone A - Burlington
Zone B - Oakville
Zone C - Clarkson
Zone D - Long Branch
Zone E - Danforth
Zone F - Scarboro
Zone F_1 - Dunbarton

NOTE 2. a). Excluded from calculations of estimates were 13 respondents (5% of total number of respondents who desired an impractical headway of less than 10 minutes, e.g. 8 minutes, 5 minutes.

b). Graphs for headways of over 30 minutes were not drawn because there were only 10 respondents who desired headways of approximately 45 to 60 minutes.

TABLE I

ESTIMATE OF POTENTIAL RAIL COMMUTERS FOR VARIOUS COMBINATIONS OF TRIP TIME, COST AND HEADWAY, SHOWN BY ZONE OF ORIGIN

ESTIMATE I, NUMBER OF POTENTIAL RAIL COMMUTERS, BASED ON COMBINATIONS OF CONDITIONS DESIRED BY RESPONDENTS

Origin zone	Trip time (min)	Cost (¢)	Headway (min)	Number of respondents	Projection factor	Estimated potential
A Burlington	30	60	15	12	10.05	121
B Oakville	15	40	10	39	13.44	524
C Port Credit	10	20	10	69	36.26	2502
D Mimico	10	20	10	59	133.26	7862
E Danforth	10	20	10	16	187.76	3004
F Scarboro	10	20	10	49	235.18	11524
F_1 Ajax Pickering	30	35	10	26	48.80	1269
				270		26806

ESTIMATE II (PROPOSED), BASED ON COMBINATIONS OF CONDITIONS PROPOSED BY TRAFFIC ENGINEERS

Origin zone	Trip time	Cost	Headway	Number of respondents	Projection factor	Estimated potential
A Burlington	55	83	20	4	10.05	40
B Oakville	42	56	20	2	13.44	27
C Port Credit	35	42	20	14	36.26	508
D Mimico	21	25	20	18	133.26	2399
E Danforth	11	25	20	6	187.76	1126
F Scarboro	19	25	20	15	235.18	3528
F_1 Ajax Pickering	40	52	20	5	48.80	244
				64		7872

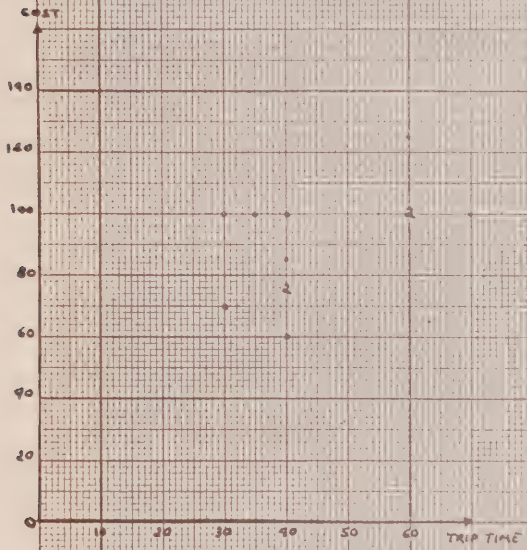
ESTIMATE III (SUGGESTED), BASED ON TRIP TIME AND COST PROPOSED IN ESTIMATE II WITH INCREASED HEADWAY

Origin zone	Trip time	Cost	Headway	Number of respondents	Projection factor	Estimated potential
A Burlington	55	83	15	4	10.05	40
B Oakville	42	56	15	4	13.44	54
C Port Credit	35	42	15	22	36.26	798
D Mimico	21	25	15	38	133.26	5064
E Danforth	11	25	15	10	187.76	1878
F Scarboro	19	25	15	35	235.18	8231
F_1 Ajax Pickering	40	52	15	6	48.80	293
				119		16358

APPENDIX

DISTRIBUTION OF POTENTIAL NUMBER OF RAIL COMMUTERS FOR GIVEN HEADWAYS

FROM ZONE A (BURLINGTON) TO TORONTO 1 AND 2



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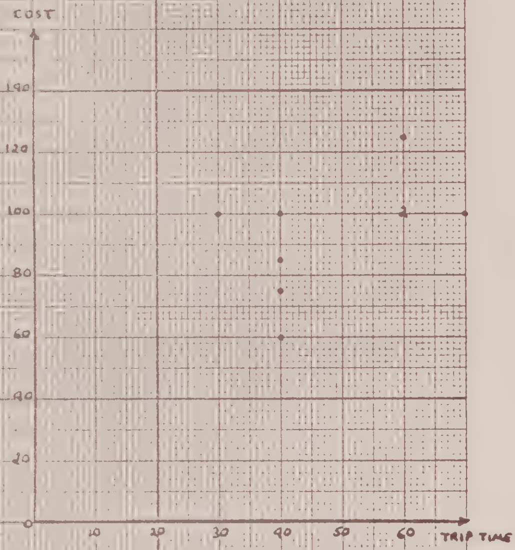

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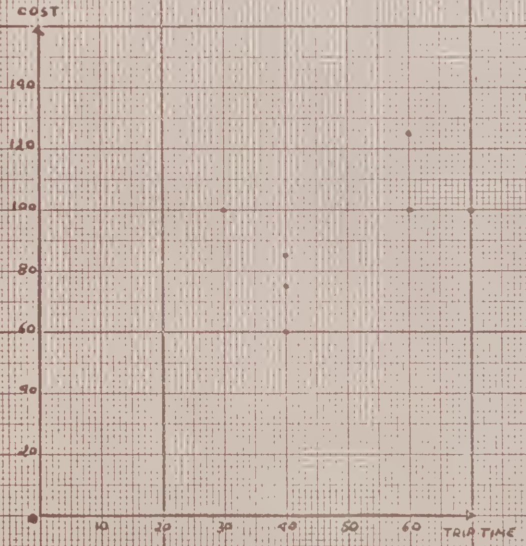
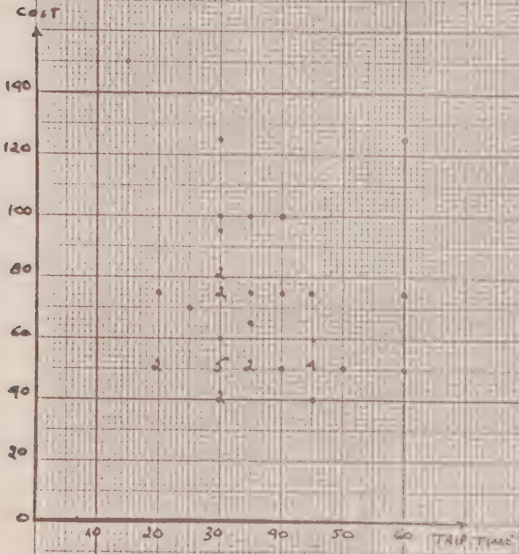


headway: 30 minutes or more

APPENDIX

DISTRIBUTION OF POTENTIAL NUMBER OF RAIL COMMUTERS FOR GIVEN HEADWAYS

FROM ZONE B (OAKVILLE) TO TORONTO 1 AND 2



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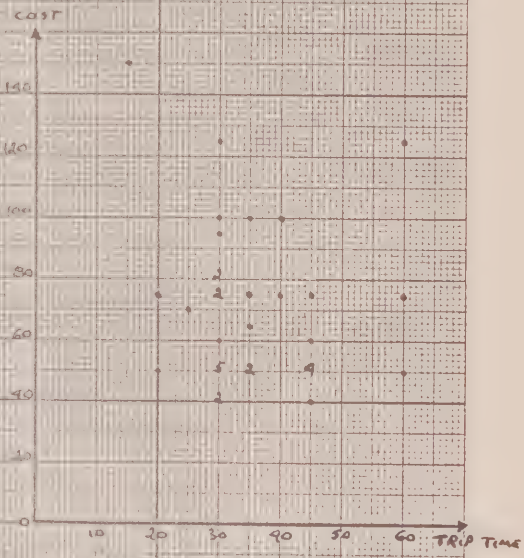

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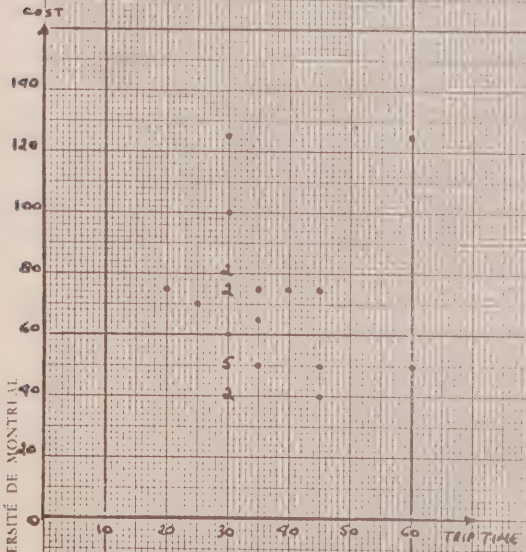

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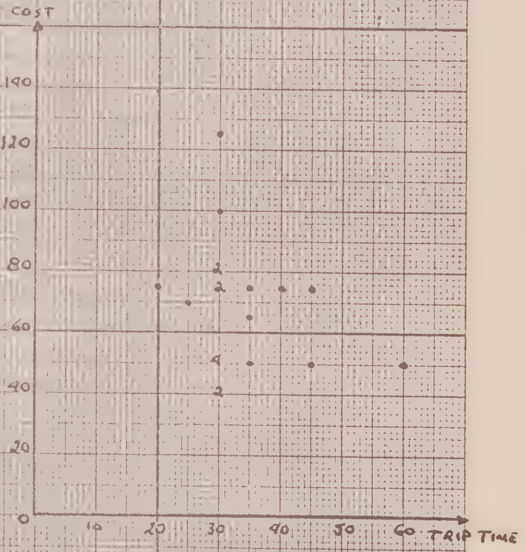
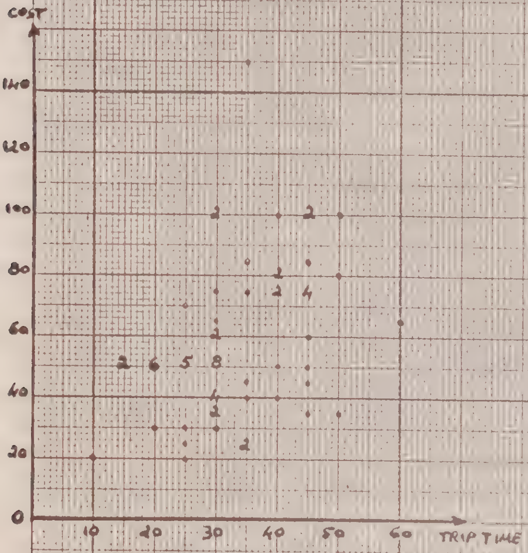


headway: 30 minutes or more

APPENDIX

DISTRIBUTION OF POTENTIAL NUMBER OF RAIL COMMUTERS FOR GIVEN HEADWAYS

FROM ZONE C (PORT CREDIT) TO TORONTO 1 AND 2



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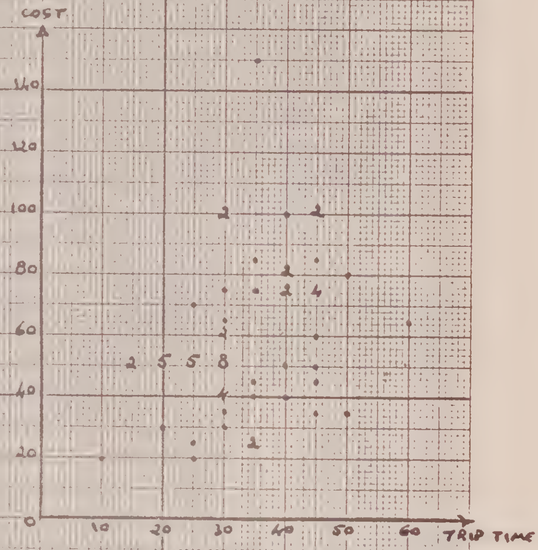

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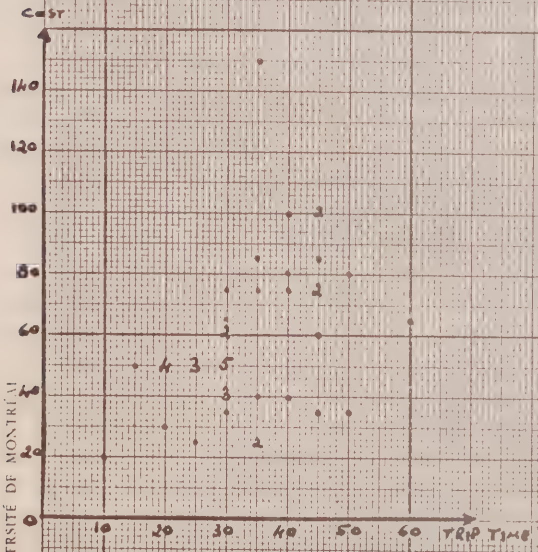

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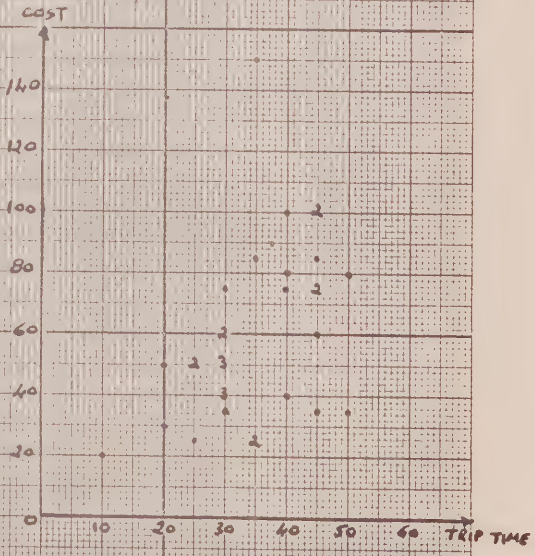

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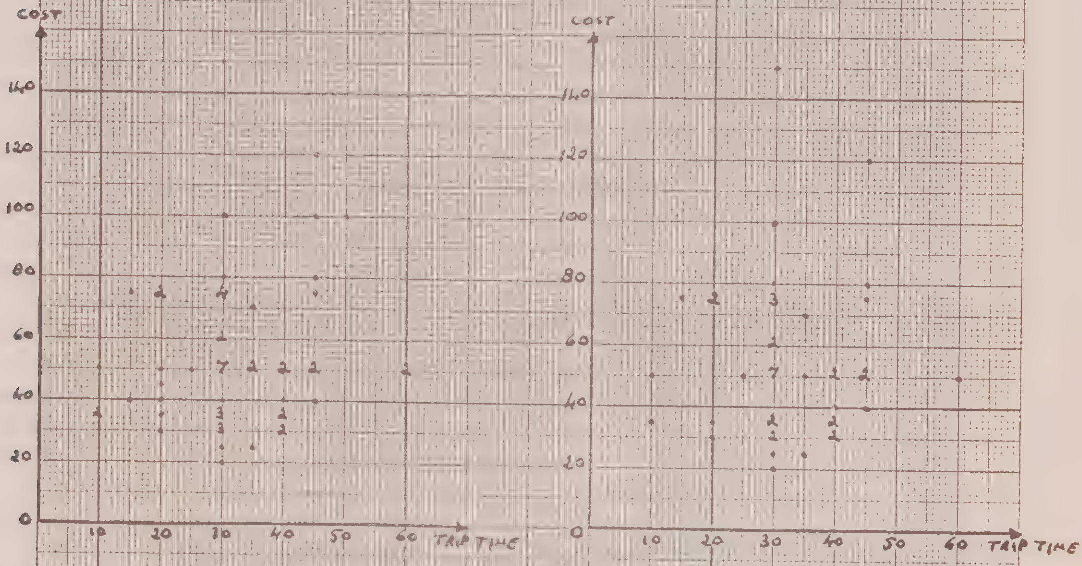
APPENDIX

DISTRIBUTION OF POTENTIAL NUMBER OF RAIL COMMUTERS FOR GIVEN HEADWAYS

FROM ZONE D (MIMICO) TO TORONTO 1 AND 2



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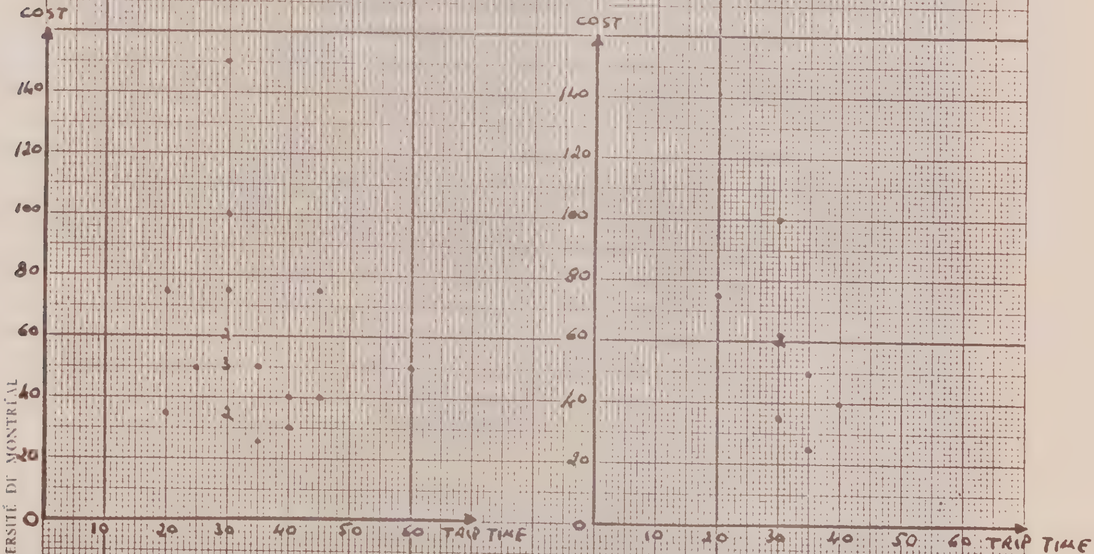

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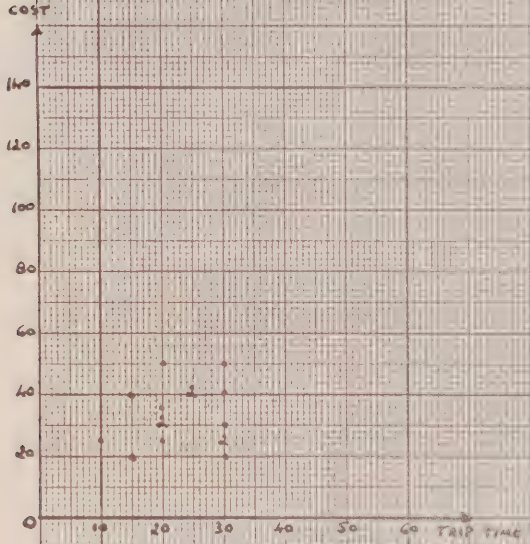
APPENDIX

DISTRIBUTION OF POTENTIAL NUMBER OF RAIL COMMUTERS FOR GIVEN HEADWAYS

FROM ZONE E (DANFORTH) TO TORONTO 1 AND 2



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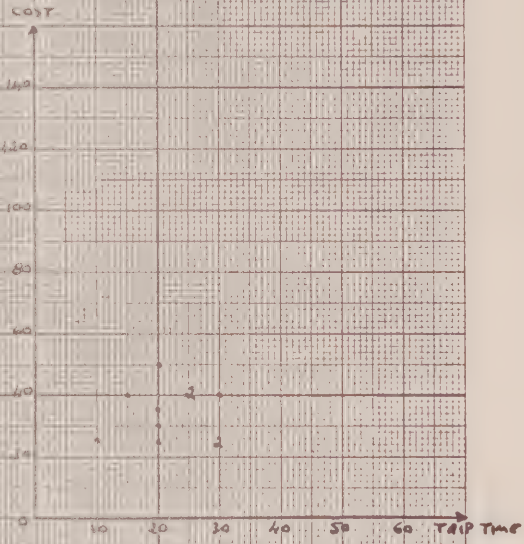

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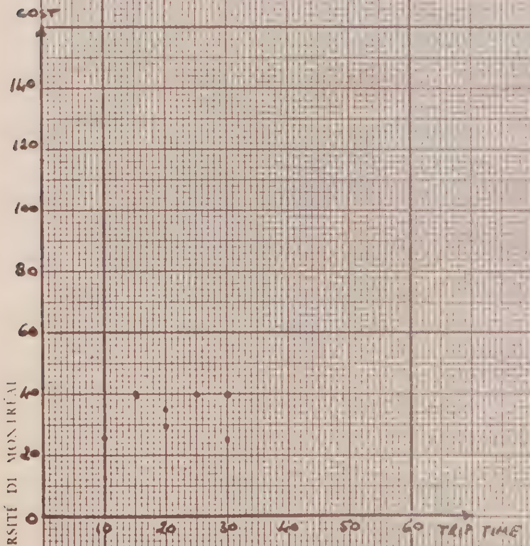

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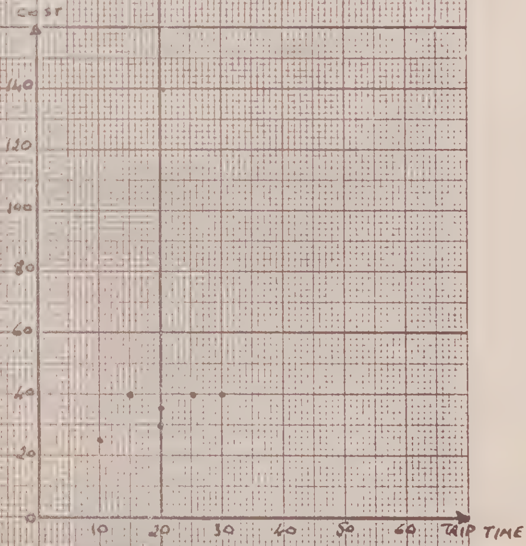
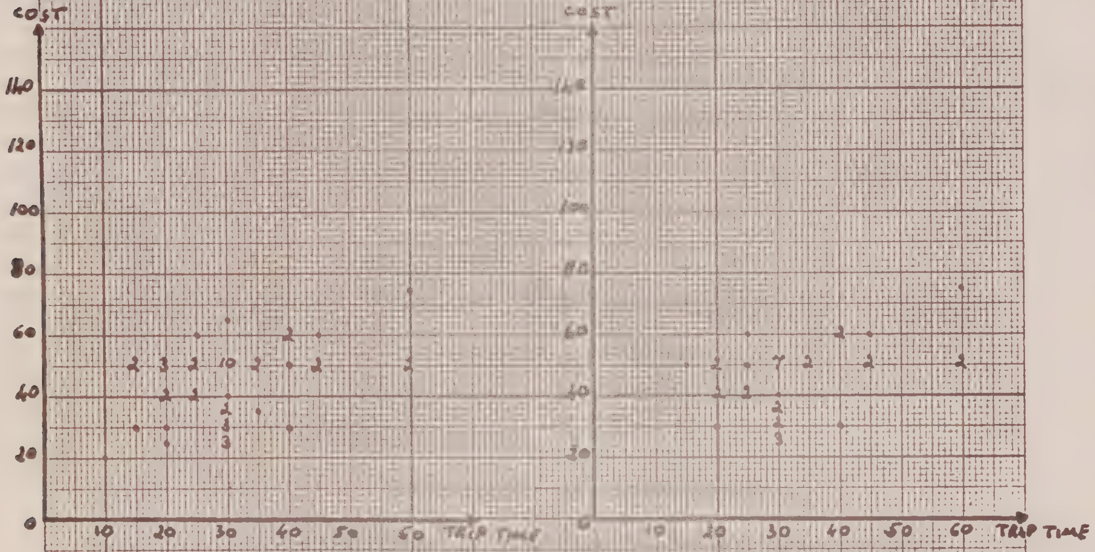


headway: 30 minutes or more

APPENDIX

DISTRIBUTION OF POTENTIAL NUMBER OF RAIL COMMUTERS FOR GIVEN HEADWAYS

FROM ZONE F (SCARBORO) TO TORONTO 1 AND 2



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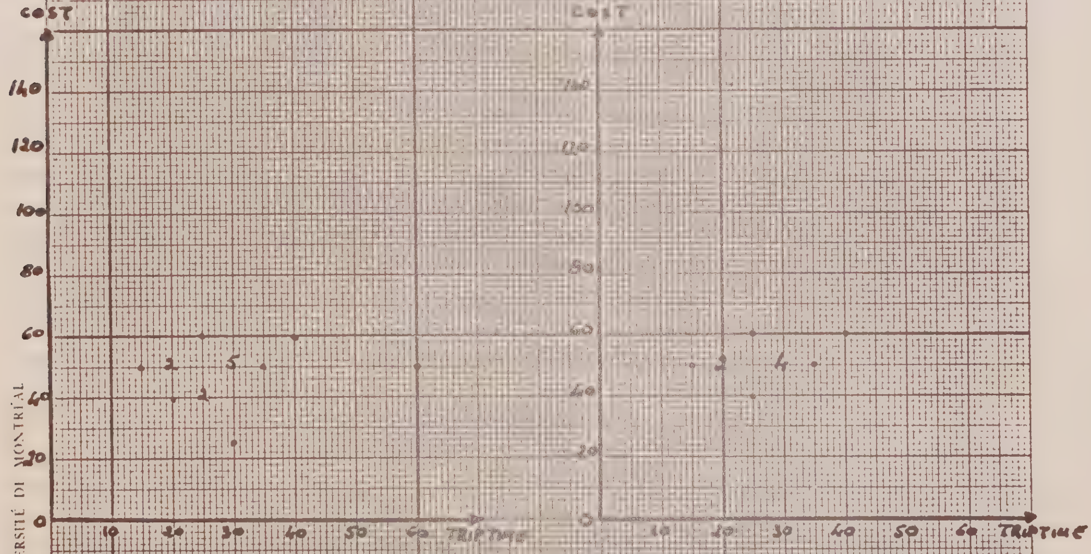

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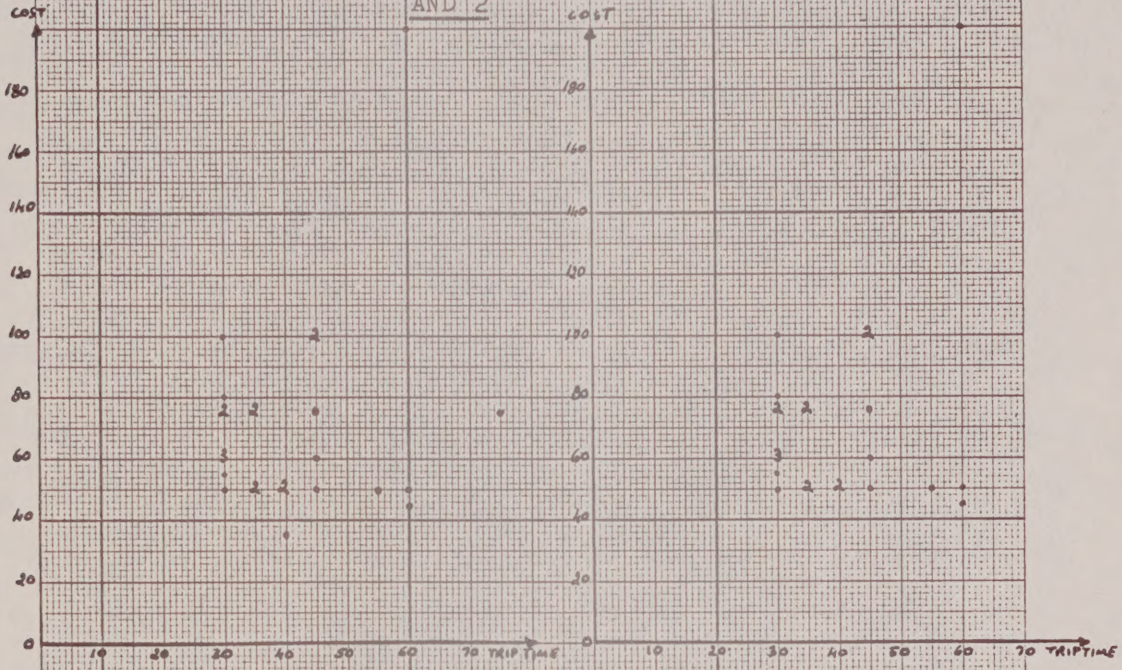
APPENDIX

DISTRIBUTION OF POTENTIAL NUMBER OF RAIL COMMUTERS FOR GIVEN HEADWAYS FROM ZONE F_1 (AJAX, PICKERING) TO TORONTO 1 AND 2



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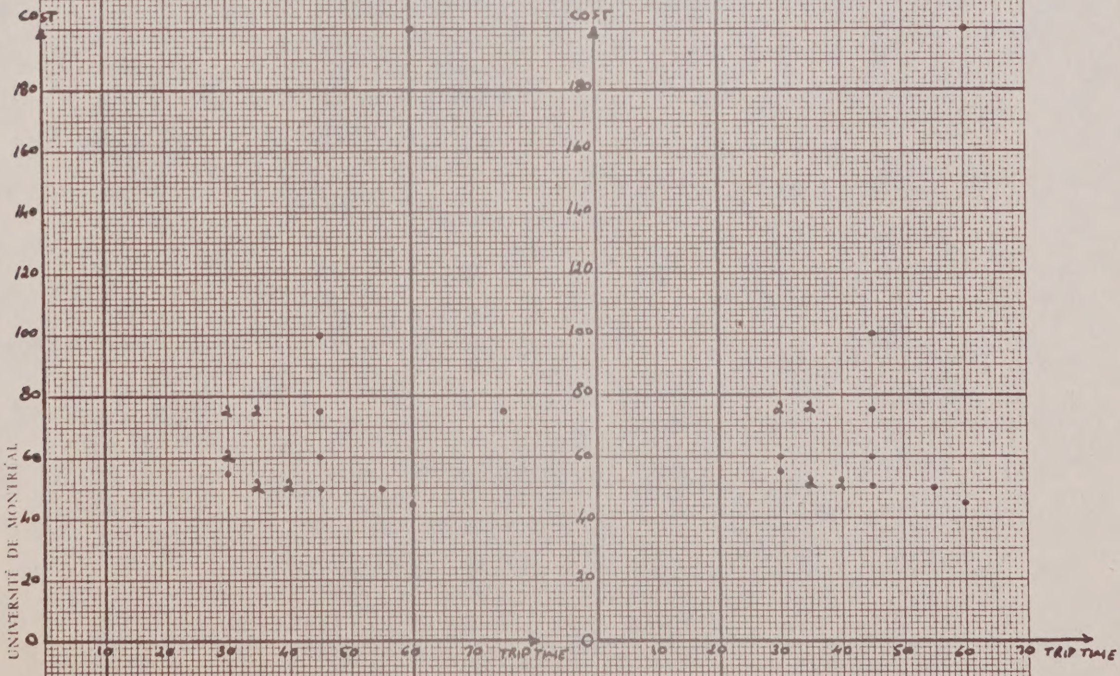

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